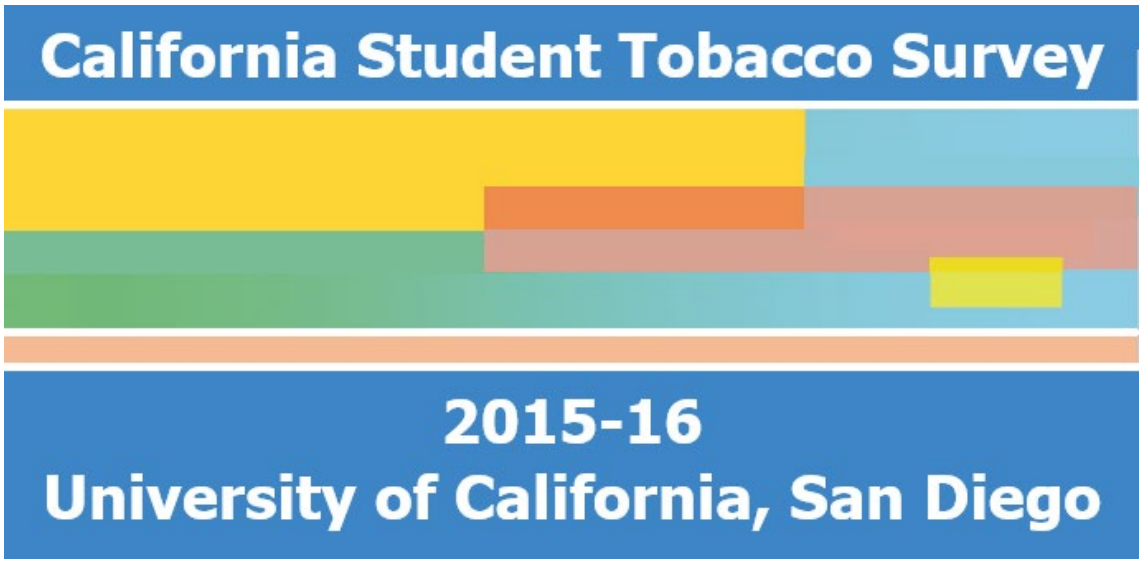
2015-16

California Student Tobacco Survey

Biennial Statewide Survey
University of California,
San Diego



Results of the Statewide Student Survey

Grades 8, 10, and 12

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EXECUTIVE SUMMARY

This report summarizes the main results from the 2015-16 California Student Tobacco Survey (CSTS), which was administered to 8th, 10th, and 12th grade students (N=47,981) in 117 schools from October, 2015 to June, 2016. The data collection was completed prior to June 9, 2016 when state law raised the legal age of tobacco sales from 18 to 21 years of age. Schools were randomly selected to provide a representative sample of California middle and high schools. The survey is the latest in the CSTS series, and is the first to be conducted by the University of California, San Diego.

The survey included questions about cigarettes and other tobacco products. For purposes of this report, other tobacco products include electronic cigarettes (e-cigarettes), big cigars, little cigars and cigarillos (LCC), kreteks, hookah, and smokeless tobacco. The survey also included questions on marijuana use, which is summarized in a separate chapter in this report.

The report focuses primarily on results for high school students (grades 10 and 12). The results for middle school students (grade 8), which are based on a much smaller sample size, are also presented when appropriate.

Chapters 1-4 present data covering four topics: behavior, susceptibility, environment, and perceptions. These chapters examine these topics by making comparisons across students' personal characteristics such as demographics, sensation-seeking, depressive symptoms, and academic achievement. Chapter 5 examines geographic differences in the use of tobacco.

Chapter 6 provides a historical context by comparing the 2015-16 CSTS tobacco prevalence rates to data from earlier administrations of the CSTS (2001-02 to 2011-12). Chapter 6 also compares the CSTS trends over time to those found in the California Healthy Kids Survey (CHKS) and to two nationally representative surveys of youth, Monitoring the Future (MTF) and the National Youth Tobacco Survey (NYTS).

Chapter 7 provides an overview of marijuana use and marijuana-tobacco co-use, including student-reported order of first product (cigarette vs. marijuana) used, exposure and susceptibility to marijuana, and harm perception.

The Appendix provides a brief overview of the survey methodology. Additional details about the sampling strategy and survey administration can be found in the *Technical Report on Analytic Methods and Approaches Used in the California Student Tobacco Survey 2015-2016* by Zhu et al.[1]

KEY FINDINGS

Tobacco Use Behavior

- High school students' current use (i.e., use in the last 30 days) of any tobacco products was 13.6%.
- The current use prevalence among high school students was highest for e-cigarettes (8.6%), followed by hookah (4.8%) and little cigars and cigarillos (LCC; 4.3%).
- The current e-cigarette use was 8.6%, which is double of that for cigarette smoking prevalence (4.3%).
- Use of multiple tobacco products was common among students. Among current tobacco users in high school, 45% reported using more than one tobacco product.
- The prevalence for all products were lower for 8th graders than for high school students: e-cigarettes, (3.2%), hookah (2.2%), cigarettes (1.2%), and LCC (0.7%). Among 8th grade students, 4.5% reported currently using at least one tobacco product.
- From 2002 to 2010, there was no significant decline in cigarette smoking prevalence among California students, even as smoking prevalence was declining on a national level. By 2011-12, smoking among California youth had begun to decline rapidly from 16.4% in 2009-10 to 11.8% in 2011-12 and 4.3% in 2015-16.

Tobacco Use by Personal Characteristics

- Rates of current tobacco use among high school students for White ethnicity (18.9%), was higher than that for Black (10.6%), Hispanic (13.5%), and Asian (5.6%). However, the category "Other", which groups several smaller ethnic groups (for statistical reasons), had the highest prevalence, 19.4%.
- Male high school students, older high school students, and high school students from rural areas had higher rates of current tobacco use.
- Other personal characteristics that were associated with a greater rate of tobacco use among high school students include: sensation-seeking, depressive symptoms, school absenteeism, low academic achievement, and more spending money. These characteristics were also associated with greater susceptibility to using tobacco products among high school students who had never tried tobacco.

Non-Tobacco Users' Exposure to Tobacco Use

- The majority of high school students (83.5%) had complete bans on smoking in their home. However, rates of complete bans against vaping were substantially lower (69.5%).
- A substantial proportion of students were exposed to second-hand smoke. Even among high school students who had never smoked, over a third (36.4%) were exposed to cigarette smoke in a room or car in the last 30 days.
- Students who never used any tobacco products were often offered tobacco products by others. Among high school students who had never used e-cigarettes, hookah, LCC, or cigarettes, 12.4% had been offered at least one of these products in the last 30 days. Over a quarter (27.5%) were susceptible to using at least one of these products, if offered by a best friend.

Marijuana Use and Marijuana-Tobacco Co-use

- Current use of marijuana among high school students was 14.5%. Of these current users, 41% used marijuana alone and 59% used both marijuana and tobacco.
- The majority (64.6%) of high school students who had tried both marijuana and cigarettes reported using marijuana before cigarettes.
- Almost a quarter (24.8%) of high school students who had never used marijuana were susceptible to trying it, if offered by their best friend.
- The majority (60.2%) of high school students believed cigarettes were more harmful than marijuana. About 30% thought the products were equally harmful, with 10.1% believing marijuana to be more harmful than cigarettes.

CHAPTER 1 – Tobacco Use Behavior

This chapter presents student tobacco use behavior data from the 2015-16 California Student Tobacco Survey (CSTS), including both ever use and current use of various tobacco products. Current use is defined as use within the last 30 days and ever use is defined as use within a lifetime. This chapter also provides overall prevalence rates of tobacco products and the use of specific products across various demographics (e.g., ethnicity, gender). The primary focus of this chapter is on data from high school students.

2015-16 CSTS Tobacco Products

Participants in the 2015-16 CSTS were shown a chart of tobacco products at the start of the survey. Pictures of each product were accompanied by a brief description and examples of popular brands. Table 1 shows the descriptions for each tobacco product.

Table 1. Definitions of each tobacco product in the 2015-16 CSTS

E-cigarettes	Also called e-cigs, vapes, vape pens, e-hookah, hookah pens, tanks or mods. Some come with liquid inside and others you fill yourself. Popular names are Blu, NJOY, MarkTen, eGo, Imperial, and Fantasia.*
Cigarettes	Sold in packs and cartons. Popular brands include Marlboro, Newport, Pall Mall, Camel, and Winston.
Big cigars	Tobacco wrapped in a tobacco leaf. Popular brands are Romeo Y Julieta, Cohiba, Davidoff, and Ashton.
Little cigars or cigarillos (LCC)	Wrapped in tobacco leaf or brown paper containing tobacco. May be flavored. Popular brands are Swisher Sweets, White Owl, and Black & Mild.
Kreteks (clove cigars)	Have tobacco and cloves. Popular brand is Djarum.
Hookah	Water pipe used to smoke flavored tobacco (shisha). Popular brands are Starbuzz, Al-Fakher, Samba and Social Smoke.
Smokeless tobacco (chew, dip, snuff or snus)	Loose leaf or ground tobacco leaves. It comes in a large pouch (bag) or in tins. Popular brands are Red Man, Copenhagen, Grizzly, Skoal, Swedish Match, and Klondike. Snus comes in a small pouch (like a tea bag). Popular brands are General, Marlboro, and Camel.

*Note: JUULs were not listed, as the 2015-16 CSTS was conducted before JUUL use became widespread.

Use of Specific Tobacco Products among High School Students

Table 2 examines ever and current use of tobacco products by high school students. The first row of Table 2 indicates the use of any of the listed products. Current use of any tobacco was 13.6%. The two products with highest current usage rates in descending order were electronic cigarettes (e-cigarettes; 8.6%) and hookah (4.8%). Little cigars and cigarillos (LCC) and cigarettes each had a usage rate of 4.3% each. Current cigarette smoking prevalence for high school students in California was 4.3%, half the rate of current e-cigarette use (8.6%).

Table 2. Ever and current use of tobacco products among high school students

	Ever use N=41803 % (95% CI)	Current use N=41796 % (95% CI)
Any of the below	38.8 (38.1-39.5)	13.6 (13.1-14.1)
E-cigarettes	30.1 (29.4-30.8)	8.6 (8.2-9.0)
Cigarettes	14.2 (13.7-14.8)	4.3 (4.0-4.6)
Big cigars	5.5 (5.1-5.8)	1.6 (1.4-1.7)
LCC*	10.2 (9.7-10.6)	4.3 (4.0-4.6)
Kreteks	3.8 (3.5-4.1)	1.2 (1.0-1.3)
Hookah	19.4 (18.8-20.0)	4.8 (4.5-5.1)
Smokeless	4.3 (4.0-4.5)	1.7 (1.6-1.9)

*LCC=little cigars and cigarillos

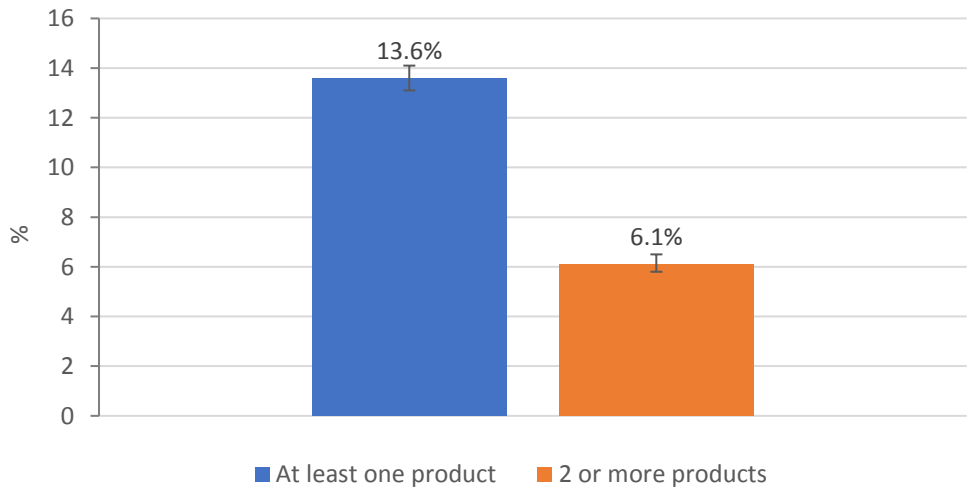
Last 30 Day Use

The 2015-16 CSTS asked current smokers: "In the last 30 days, how many days did you smoke cigarettes"? Answer options were 1 or 2 days, 3 to 5 days, 6 to 9 days, 10 to 19 days, 20 to 29 days, and all 30 days. In order to calculate the average number of days, the midpoint of each category was taken. Current smokers reported smoking a median of 3.5 days in the last 30 days. The same question was asked of current e-cigarette users: "In the last 30 days, how many days did you use e-cigarettes?" The median was 2.9 days of e-cigarette use in the last 30 days.

Multiple Tobacco Product Use

Figure 1 examines the current use of multiple tobacco products, which is often referred to as *poly use*. Rates of such use are high. 13.6% of high school students who reported currently using at least one product. 6.1% reported currently using more than one.

Figure 1. Current use of multiple tobacco products among high school students



Use of Any Tobacco Product among High School Students by Demographics

Table 3 examines high school student tobacco prevalence, both ever and current use, by demographics. Male students were more likely to be current users of tobacco than female students. There were clear ethnic differences in tobacco use. Whites and Others (see Appendix for demographic definitions) had the highest rates of current tobacco use (18.9% and 19.4%, respectively) compared to 15.8% for multiple-race, 13.5% for Hispanics, 10.6% for Blacks, and 5.6% for Asians. The small number of Native Hawaiian or Other Pacific Islanders (NHOPI) limits our ability to determine whether the differences between these groups and other ethnic groups were due to chance. As expected, use of tobacco was higher among 12th graders than among 10th graders.

Table 3. Tobacco use by gender, ethnicity, and grade among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	41802	38.8 (38.1-39.5)	13.6 (13.1-14.1)
Gender			
Male	20843	39.9 (38.8-40.9)	16.0 (15.3-16.7)
Female	20847	37.7 (36.7-38.7)	11.2 (10.6-11.8)
Ethnicity			
White	7691	39.6 (38.1-41.2)	18.9 (17.7-20.2)
Black	1302	34.0 (30.0-38.0)	10.6 (8.1-13.1)
Hispanic	22396	43.0 (42.0-44.0)	13.5 (12.8-14.2)
Asian	5153	19.0 (17.5-20.6)	5.6 (4.7-6.5)
NHOPI	387	47.4 (39.5-55.2)	12.3 (8.4-16.2)
Other	1027	39.3 (34.9-43.8)	19.4 (15.3-23.5)
Multiple	3598	41.6 (39.1-44.1)	15.8 (14.1-17.5)
Grade			
Grade 10	22155	33.6 (32.6-34.6)	10.3 (9.7-10.9)
Grade 12	19648	44.5 (43.4-45.5)	17.2 (16.4-17.9)

NHOPI = Native Hawaiian and Other Pacific Islander

Other: See Appendix for definition

Use of Specific Tobacco Products by Demographics

The following section (Tables 4-6) examines tobacco product use across various participant characteristics including gender, ethnicity, and grade.

Table 4 indicates that among high school students, current use of each tobacco product was higher among male students than female students. The difference in use by gender was significant for all products. The largest differences were for smokeless tobacco and big cigars, which were almost exclusively used by males.

Table 4. Current use of tobacco products by gender among high school students

	Male N=20842 % (95% CI)	Female N=20842 % (95% CI)
Any of the below	16.0 (15.3-16.7)	11.2 (10.6-11.8)
E-cigarettes	10.5 (9.8-11.1)	6.8 (6.3-7.3)
Cigarettes	5.3 (4.8-5.7)	3.4 (3.0-3.7)
Big cigars	2.5 (2.2-2.8)	0.6 (0.4-0.8)
LCC*	6.0 (5.5-6.5)	2.7 (2.4-3.0)
Kreteks	1.6 (1.3-1.8)	0.7 (0.5-1.0)
Hookah	5.4 (5.0-5.9)	4.1 (3.7-4.5)
Smokeless	2.7 (2.4-3.0)	0.7 (0.5-0.9)

*LCC=little cigars and cigarillos

Table 5 presents the current use of tobacco products by ethnicity for the 2015-16 CSTS. Among high school students, Whites were more likely to use smokeless tobacco than any other ethnicity, although the prevalence is still under 4%. Whites and Others had the highest rates of use of e-cigarettes, cigarettes, and big cigars. Blacks had much lower rates of cigarette smoking and use of e-cigarettes than Whites, but similar rates of LCC.

Table 5. Current use of tobacco products by ethnicity among high school students

	White N=7691 % (95% CI)	Black N=1301 % (95% CI)	Hispanic N=22393 % (95% CI)	Asian N=5153 % (95% CI)	NHOPI N=387 % (95% CI)	Other N=1027 % (95% CI)	Multiple N=3597 % (95% CI)
Overall	18.9 (17.7-20.2)	10.6 (8.1-13.1)	13.5 (12.8-14.2)	5.6 (4.7-6.5)	12.3 (8.4-16.2)	19.4 (15.3-23.5)	15.8 (14.1-17.5)
E-cigarettes	12.8 (11.8-13.8)	4.5 (2.9-6.1)	8.3 (7.8-8.9)	4.1 (3.3-4.9)	9.6 (6.0-13.2)	11.2 (7.6-14.8)	10.2 (8.8-11.7)
Cigarettes	6.0 (5.3-6.8)	1.8 (1.0-2.7)	4.3 (3.9-4.7)	1.6 (1.1-2.1)	4.6 (2.2-6.9)	7.3 (4.0-10.6)	5.3 (4.3-6.4)
Big cigars	2.7 (2.2-3.2)	1.2 (0.5-1.9)	1.4 (1.1-1.6)	0.4 (0.1-0.6)	1.4 (0.0-2.9)	2.7 (1.1-4.3)	2.1 (1.3-2.8)
LCC*	6.0 (5.2-6.7)	5.6 (3.5-7.6)	4.3 (3.9-4.8)	1.3 (0.8-1.7)	4.7 (2.3-7.1)	5.1 (3.3-6.9)	5.2 (4.1-6.3)
Kreteks	1.2 (0.8-1.6)	1.4 (0.5-2.4)	1.3 (1.0-1.5)	0.3 (0.1-0.5)	1.1 (0.0-2.5)	1.7 (0.8-2.7)	1.1 (0.6-1.6)
Hookah	5.8 (5.1-6.5)	3.9 (2.6-5.3)	4.9 (4.4-5.3)	1.5 (1.1-1.9)	3.8 (1.6-6.1)	11.4 (8.6-14.2)	5.4 (4.4-6.4)
Smokeless	3.9 (3.4-4.5)	1.0 (0.4-1.6)	1.4 (1.1-1.6)	0.3 (0.1-0.5)	2.0 (0.3-3.8)	2.1 (0.9-3.4)	2.1 (1.5-2.8)

*LCC=little cigars and cigarillos
NHOPI = Native Hawaiian and Other Pacific Islander
Other: See Appendix for definition

Table 6 examines the differences in product choice by grade among high school students. As expected, current use of all tobacco products increased as students got older. The greatest increase in usage from 10th to 12th grade was in LCC, which more than doubled.

Table 6. Current use of tobacco products by grade among high school students

	Grade 10 N=22151 % (95% CI)	Grade 12 N=19645 % (95% CI)
Overall	10.3 (9.7-10.9)	17.2 (16.4-17.9)
E-cigarettes	6.7 (6.2-7.3)	10.7 (10.1-11.3)
Cigarettes	3.2 (2.8-3.5)	5.6 (5.1-6.0)
Big cigars	1.2 (0.9-1.4)	2.0 (1.7-2.3)
LCC*	2.7 (2.4-3.1)	6.0 (5.6-6.5)
Kreteks	1.0 (0.8-1.2)	1.3 (1.1-1.5)
Hookah	3.7 (3.3-4.1)	5.9 (5.5-6.4)
Smokeless	1.4 (1.2-1.6)	2.1 (1.8-2.3)

*LCC=little cigars and cigarillos

Use of Any Tobacco Product by Personal Characteristics

Table 7 shows the relationship between any tobacco use and students' reported academic achievement. There is a clear gradient of tobacco use across academic success. High school students who reported higher academic achievement had lower tobacco use rates than those who had lower academic achievement. Students who indicated they received *mostly D's and F's* were over twice as likely to be current tobacco users as those who received *mostly A's and B's* (25.1% vs. 10.3%, respectively).

Table 7. Tobacco use by reported academic achievement among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	41803	38.8 (38.1-39.5)	13.6 (13.1-14.1)
Mostly A's and B's	21796	31.3 (30.3-32.2)	10.3 (9.7-10.9)
Mostly B's and C's	13093	44.3 (43.0-45.6)	15.5 (14.5-16.4)
Mostly C's and D's	4440	50.8 (48.5-53.1)	18.5 (16.8-20.2)
Mostly D's and F's	1475	58.9 (54.8-62.9)	25.1 (21.8-28.4)
No grades	438	45.9 (38.7-53.1)	22.2 (16.8-27.6)

Students were asked: *In the last 30 days, how many days did you miss school for any reason, with or without permission?* In this survey, no attempt was made to determine the reason for the absences. Table 8 shows that absenteeism was associated with higher rates of tobacco use among high school students. Current use of tobacco was 9.0% for those students who had not missed any school in the past month compared to 14.0% for those with 1-5 days absence. Those with six or more days absent had the highest rate of tobacco use at 26.8%.

Table 8. Tobacco use by school absence in the past month among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	41803	38.8 (38.1-39.5)	13.6 (13.1-14.1)
0 days	15785	31.0 (29.9-32.1)	9.0 (8.4-9.7)
1-5 days	20447	40.7 (39.7-41.7)	14.0 (13.3-14.7)
6 + days	5024	56.8 (54.6-59.0)	26.8 (24.9-28.7)

In the survey, students were asked the question: *During an average week, about how much money do you get from a job or other sources (like an allowance)?* Table 9 shows that high school students with spending money were more likely than those without to use tobacco and the greater the amount of money, the greater the use. Students with no money had a current tobacco use prevalence of 7.6%, which increased to 9.6% among those with $1-$10, 14.8% among those with $11-$50, and 26.4% among students with over $50 a week.

Table 9. Tobacco use by weekly spending money among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	41803	38.8 (38.1-39.5)	13.6 (13.1-14.1)
None	14726	28.8 (27.6-29.9)	7.6 (7.0-8.2)
$1-$10	6939	34.2 (32.5-35.9)	9.6 (8.6-10.6)
$11-$50	11812	42.8 (41.5-44.2)	14.8 (13.8-15.8)
$51 +	7755	55.6 (53.9-57.2)	26.4 (24.9-27.8)

Table 10 shows the pattern of tobacco use by the frequency of attending religious services. High school students who never attended religious services were more likely to be current tobacco users than those who attended services more frequently.

Table 10. Tobacco use by attendance at religious services among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	41803	38.8 (38.1-39.5)	13.6 (13.1-14.1)
Never	11778	41.4 (40.0-42.7)	16.8 (15.8-17.8)
Rarely	12680	40.5 (39.2-41.8)	13.6 (12.7-14.5)
Once or twice a month	5304	41.1 (39.0-43.2)	13.3 (12.0-14.6)
About once a week	8003	32.9 (31.4-34.5)	9.5 (8.6-10.3)
More than once a week	3509	33.4 (30.8-35.9)	11.9 (10.2-13.7)

Table 11 shows the use of tobacco products among high school students by the personality trait of sensation-seeking[2] and by a measure of depressive symptoms. Students were asked how much they agreed with the statement: *I like new and exciting experiences, even if I have to break the rules*. The answer options of strongly agree, agree, disagree, and strongly disagree were dichotomized into Yes (agree or strongly agree) or No (disagree or strongly disagree). They were also asked: *In the last 12 months, did you ever feel sad and hopeless every day for 2 weeks or more?* Those coded as sensation seekers and those with depressive symptoms in the last 12 months were more likely to use tobacco products.

Table 11. Tobacco use by sensation-seeking and depression among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	41803	38.8 (38.1-39.5)	13.6 (13.1-14.1)
Sensation-seeking			
Yes	20967	52.2 (51.1-53.2)	20.3 (19.5-21.1)
No	20259	24.5 (23.5-25.4)	6.3 (5.8-6.8)
Depressive symptoms			
Yes	11938	45.2 (43.8-46.6)	16.0 (15.0-17.0)
No	29329	36.0 (35.2-36.9)	12.5 (11.9-13.0)

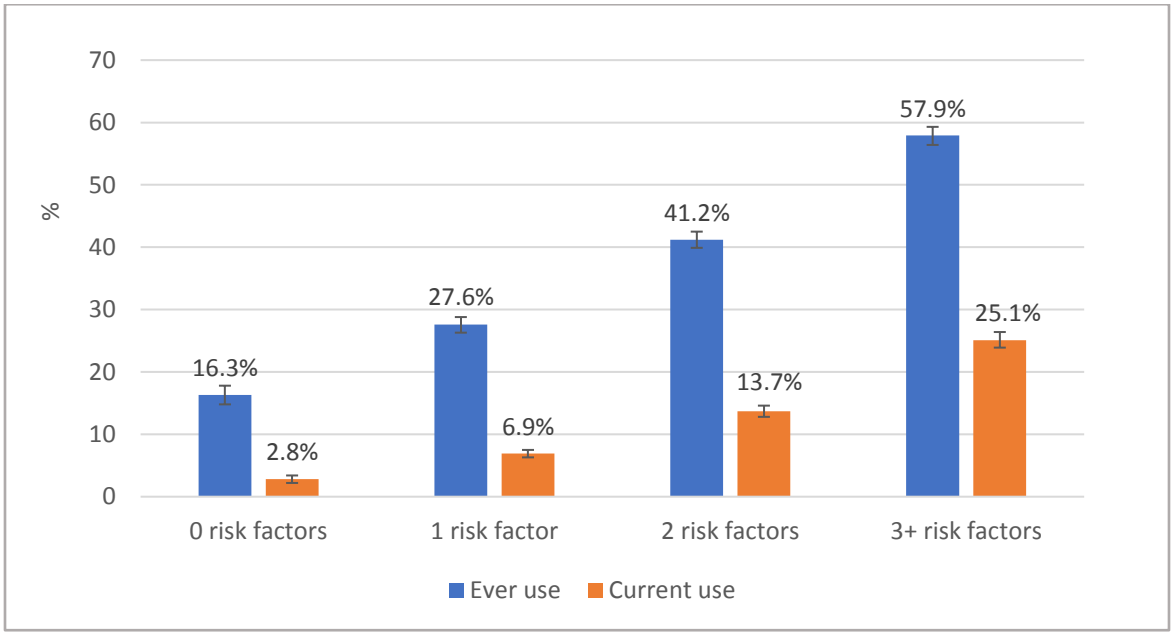
Use of Any Tobacco Product by Risk Factors

Figure 2 shows analyses of tobacco use prevalence by risk factors among high school students. The striped bars on the left show ever use of any tobacco and the solid bars on the right show current use of any tobacco in the last 30 days.

Risk factors included (1) low academic achievement (receiving mostly Cs, Ds, and Fs), (2) school absenteeism (missing 6 or more days in the past month), (3) greater spending money ($51 and more per week), (4) low attendance at religious services (never/rarely attend), (5) sensation-seeking, and (6) depressive symptoms. Students with zero risk factors are compared to those with 1, 2, and 3 or more risk factors.

Prevalence was highly correlated with the number of risk factors for both ever use of tobacco and current use of tobacco.

Figure 2. Prevalence of ever and current tobacco use by number of risk factors among high school students



Use of Tobacco Products – 8th grade

Table 12 examines ever and current tobacco product use by 8th grade students in 2015-16. As expected, overall current use rates are much lower than for the older students (4.5% vs. 13.6%, respectively). E-cigarettes were the most commonly tried product among ever users (12.1%), followed by hookah (7.6%), cigarettes (5.2%), and LCC (2.1%).

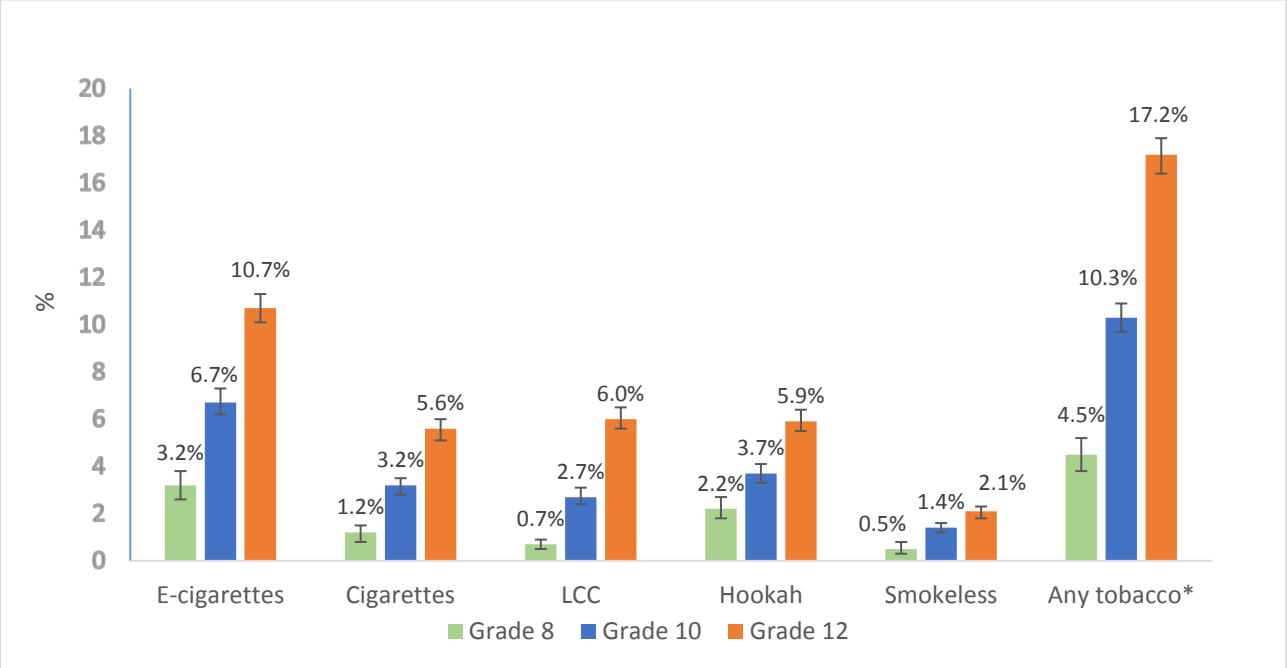
Table 12. Use of tobacco products among 8th graders

	Ever use N=6159 % (95% CI)	Current use N=6159 % (95% CI)
Any of the below	17.3 (16.1-18.5)	4.5 (3.8-5.2)
E-cigarettes	12.1 (11.0-13.2)	3.2 (2.6-3.8)
Cigarettes	5.2 (4.5-6.0)	1.2 (0.8-1.5)
Big cigars	1.3 (1.0-1.6)	0.4 (0.3-0.6)
LCC*	2.1 (1.7-2.5)	0.7 (0.5-0.9)
Kreteks	1.3 (1.0-1.7)	0.5 (0.3-0.7)
Hookah	7.6 (6.8-8.4)	2.2 (1.8-2.7)
Smokeless	1.4 (1.0-1.8)	0.5 (0.3-0.8)

*LCC=little cigars and cigarillos

Figure 3 shows current tobacco use by grade. The rate of current use of any tobacco (e-cigarettes, cigarettes, big cigars, LCC, kreteks, hookah, and smokeless) was lowest among 8th grade students (4.5%), greater among 10th graders (10.3%), and highest among 12th grade students (17.2%).

Figure 3. Current tobacco use by grade



* E-cigarettes, LCC, hookah, cigarettes, smokeless, plus big cigars and kreteks.
LCC=little cigars and cigarillos

Summary

In 2015-16, the most frequently currently used tobacco products among California high school students were e-cigarettes (8.6%), hookah (4.8%), LCC (4.3%), and cigarettes (4.3%). Eighth graders had lower rates of use, but the relative popularity of tobacco products was similar (i.e., e-cigarettes, hookah, LCC and cigarettes). Poly use of tobacco products was common. Tobacco use was higher among certain races/ethnicities (for example, Whites), males, and older students. Product use differed across demographics with lower cigarette smoking among Blacks and higher use of smokeless tobacco among males. Tobacco use also varied with personal characteristics in the ways one would expect. Personal characteristics, such as sensation-seeking, depressive symptoms, lower grades, and school absenteeism were related to tobacco use. These personal characteristics were used to identify students with multiple risk factors. Students with 3 or more risk factors were three to four times more likely to currently use tobacco than students with only 1 risk factor.

CHAPTER 2 – Susceptibility to Tobacco Use

Susceptibility to Tobacco Products

Research has shown that it is possible to measure an adolescent's susceptibility to begin smoking and that this measure predicts future use.[3] In the 2015-16 California Student Tobacco Survey (CSTS), susceptibility was measured by asking students who did not currently use a tobacco product whether they would use it if their best friend offered it. Answer options were definitely yes, probably yes, probably not, and definitely not. Those who answered anything other than *definitely not* were considered susceptible. Table 13 shows the susceptibility of high school students both by never users of the product and by never users of any tobacco product. Never users of the product were most susceptible to the use of hookah (30.4%), followed by e-cigarettes (21.3%) and LCC (16.3%), and least susceptible to offers of cigarettes (14.2%). Susceptibility was somewhat lower among the subset of those who had never used any of the four products. Still, over a quarter of students who had never used any of these products were susceptible to trying at least one of the products, if offered by their best friend.

Table 13. Susceptibility by never users of the product and any tobacco products among high school students

	Never users of the product		Never users of any tobacco product	
	N	% (95% CI)	N	% (95% CI)
Any of the below	25580	27.5 (26.6-28.3)	25580	27.5 (26.6-28.3)
E-cigarettes	29297	21.3 (20.5-22.0)	25575	19.3 (18.6-20.1)
Cigarettes	35686	14.2 (13.6-14.8)	25576	12.0 (11.4-12.6)
LCC*	37229	16.3 (15.7-16.9)	25575	11.5 (10.9-12.1)
Hookah	32931	30.4 (29.6-31.2)	25569	22.0 (21.2-22.8)

*LCC=little cigars and cigarillos

Susceptibility to Any Tobacco Product by Demographics

Table 14 shows susceptibility to use any of four tobacco products (e-cigarettes, cigarettes, LCC, and hookah) by demographics. Male and female high school students were about equally susceptible to the use of tobacco products. There appear to be slight ethnic differences in susceptibility, however small sample sizes led to large confidence intervals so differences should be interpreted with caution. There was no difference in susceptibility between 10th and 12th graders.

Table 14. Susceptibility to tobacco* by gender, ethnicity, and grade among high school students

	Never users of any of four products*	
	N	% (95% CI)
Overall	25580	27.5 (26.6-28.3)
Gender		
Male	12599	26.6 (25.4-27.8)
Female	12918	28.3 (27.1-29.5)
Ethnicity		
White	4720	25.7 (23.9-27.5)
Black	825	25.5 (20.3-30.6)
Hispanic	12727	29.2 (27.9-30.4)
Asian	4157	23.4 (21.3-25.4)
NHOPI	218	26.5 (18.5-34.5)
Other	630	29.9 (24.9-35.0)
Multiple	2155	29.4 (26.4-32.4)
Grade		
Grade 10	14721	26.5 (25.3-27.6)
Grade 12	10859	28.8 (27.5-30.1)

*Four products: e-cigarettes, cigarettes, little cigars or cigarillos, and hookah

NHOPI = Native Hawaiian and Other Pacific Islander

Other: See Appendix for definition

Susceptibility to Any Tobacco Product by Personal Characteristics

Table 15 indicates that high school students with the highest reported grades (*mostly A's and B's*) were least susceptible to using tobacco products. The differences between the other academic achievement categories were not significant, although this might be due to the decreasing sample size and corresponding widening of the confidence interval as academic achievement decreases.

Table 15. Susceptibility to tobacco* by academic achievement among high school students

	Never users of any of four products*	
	N	% (95% CI)
Overall	25580	27.5 (26.6-28.3)
Mostly A's and B's	15150	24.6 (23.5-25.6)
Mostly B's and C's	7264	30.6 (29.0-32.3)
Mostly C's and D's	2139	34.5 (31.1-37.9)
Mostly D's and F's	583	36.7 (30.0-43.4)
No grades	230	21.0 (14.0-28.0)

*Four products: e-cigarettes, cigarettes, little cigars or cigarillos, and hookah

Table 16 shows that susceptibility among high school students increases as school absenteeism increases. In this survey, no attempt was made to determine the reason for the absences. Students who missed six or more days of school in the previous 30 days were about 50% more susceptible to the offer of tobacco from a best friend than those with perfect attendance.

Table 16. Susceptibility to tobacco* by school absence in the past month among high school students

	Never users of any of four products*	
	N	% (95% CI)
Overall	25580	27.5 (26.6-28.3)
0 days	10936	23.5 (22.3-24.7)
1-5 days	12257	29.8 (28.5-31.1)
6 + days	2191	35.3 (32.0-38.6)

*Four products: e-cigarettes, cigarettes, little cigars or cigarillos, and hookah

Table 17 presents the relationship between weekly spending money and susceptibility. Greater access to money was related to greater susceptibility. High school students with weekly spending money of $11 or more were about a third more susceptible to using tobacco than those with no spending money.

Table 17. Susceptibility to tobacco* by weekly spending money among high school students

	Never users of any of four products*	
	N	% (95% CI)
Overall	25580	27.5 (26.6-28.3)
None	10562	23.2 (22.0-24.5)
$1-$10	4519	27.6 (25.6-29.7)
$11-$50	6778	31.8 (30.1-33.6)
$51 +	3512	31.3 (29.0-33.5)

*Four products: e-cigarettes, cigarettes, little cigars or cigarillos, and hookah

Table 18 shows that susceptibility to using tobacco products was significantly lower among high school students who participated in religious activities more than once a week (19.4%).

Table 18. Susceptibility to tobacco* by attendance at religious services among high school students

	Never users of any of four products*	
	N	% (95% CI)
Overall	25580	27.5 (26.6-28.3)
Never	6961	27.9 (26.3-29.5)
Rarely	7523	30.3 (28.7-32.0)
Once or twice a month	3205	28.7 (26.2-31.2)
About once a week	5287	25.9 (24.0-27.7)
More than once a week	2403	19.4 (17.1-21.8)

*Four products: e-cigarettes, cigarettes, little cigars or cigarillos, and hookah

Table 19 shows data from high school students who never used tobacco products. Students were asked about sensation-seeking by responding to the statement: I like new and exciting experiences, even if I have to break the rules.[2] Those who agreed were more than twice as susceptible to offers of tobacco products as those who disagreed. Students who said yes to the question: In the last 12 months, did you ever feel sad or hopeless every day for 2 weeks or more? had about 40% higher rates of susceptibility as those who said no.

Table 19. Susceptibility to tobacco* by sensation-seeking and depression among high school students

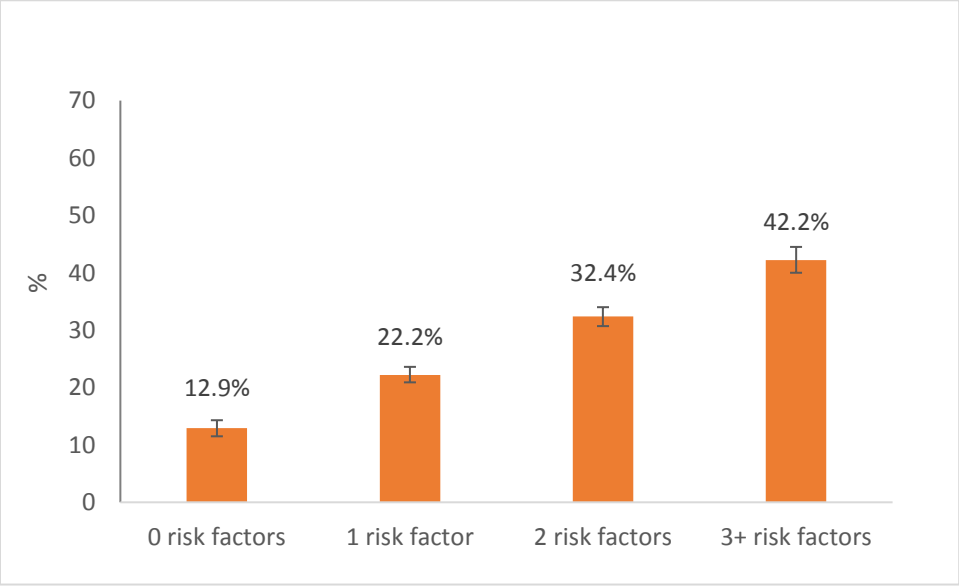
	Never users of any of four products*	
	N	% (95% CI)
Overall	25580	27.5 (26.6-28.3)
Like new and exciting experiences		
Agree	10031	41.9 (40.3-43.4)
Disagree	15316	17.7 (16.8-18.6)
Depressed in last 12 months		
Yes	6521	34.9 (33.0-36.7)
No	18868	24.8 (23.9-25.7)

*Four products: e-cigarettes, cigarettes, little cigars or cigarillos, and hookah

Figure 4 illustrates the strong positive correlation between the number of risk factors and susceptibility to use of tobacco. Risk factors, as in Figure 2, included (1) low academic achievement (receiving mostly Cs and Ds and Fs), (2) school absenteeism (missing 6 or more days in the past month), (3) greater spending money ($51 and more per week), (4) low attendance at religious services (never/rarely attend), (5) sensation-seeking, and (6) depressive symptoms. Students with zero risk factors are compared to those with 1, 2, and 3 or more risk factors.

Among high school students who had never tried cigarettes, LCC, hookah, or e-cigarettes, the greater the number of risk factors students reported, the more susceptible they were to using tobacco. Students with 3 or more risk factors were about 2-3 times more likely to be susceptible to tobacco use as students with no risk factors or a single risk factor.

Figure 4. Susceptibility to tobacco* by number of risk factors among high school students who never used them*



*Four products: e-cigarettes, cigarettes, little cigars or cigarillos, and hookah

Susceptibility to Tobacco – 8th grade

Table 20 shows the susceptibility of 8th grade students to the use of tobacco among those who have not tried a specific product or any tobacco product. Overall, 8th grade students who never used any tobacco products were less susceptible to any of the products compared to high school students (20.3% vs. 27.5%, respectively). As with older students, 8th graders are most susceptible to e-cigarettes and hookah and least susceptible to cigarettes and LCC.

Table 20. Susceptibility by never users of the product and any tobacco products among 8th grade students

	Never users of a tobacco product N=5993 % (95% CI)	Never users of any tobacco product N=5131 % (95% CI)
Any of the below	20.3 (19.0-21.7)	20.3 (19.0-21.7)
E-cigarettes	15.8 (14.6-17.0)	14.6 (13.4-15.8)
Cigarettes	10.9 (9.9-11.9)	9.3 (8.3-10.2)
LCC*	10.7 (9.7-11.7)	8.0 (7.1-8.9)
Hookah	18.6 (17.3-19.9)	14.9 (13.6-16.1)

*LCC=little cigars and cigarillos

Summary

This chapter dealt with students' susceptibility to using tobacco among those who had not yet tried a specific product or tried any tobacco product. Over a quarter of high school students who had never used a tobacco product were susceptible to using one, if it were offered by their best friend. Students were more susceptible to trying hookah and e-cigarettes than cigarettes or LCC. Susceptibility was equivalent across gender. When susceptibility differed, it differed in ways you would expect based on tobacco prevalence behavior. Thus, susceptibility was higher among sensation-seekers, those with depressive symptoms, lower grades, or school absenteeism. In addition to individual characteristics being related to susceptibility, susceptibility increased as the number of risk factors for tobacco use increased.

CHAPTER 3 – Environmental Influences

This chapter focuses on environmental influences of tobacco use in the 2015-16 California Student Tobacco Survey (CSTS). It examines whether students had home bans on smoking or vaping and their exposure to secondhand smoke. Additionally, for the first time, the survey included questions about whether students had been offered various tobacco products in the last 30 days. We compare students who currently use tobacco products with those who have never used them and include former users (i.e., those who have used a product in the past, but not within the last 30 days) to account for all students.

Home Bans on Smoking and Vaping

Table 21 (21a and 21b) presents home ban information among high school students. Students were asked to mark the statement that best describes the rules about smoking cigarettes and using e-cigarettes inside their home. The answer options to describe the rules about smoking were: (a) *there are no rules about whether people can smoke inside my home*, (b) *smoking is not allowed inside my home*, (c*) smoking is allowed in some places or at some times inside my home*, (d) *smoking is allowed anywhere inside my home*. The question about home bans on e-cigarettes substituted the term *vaping* for the term *smoking*. For analysis, the answers were classified as Complete Home Ban (option b) and No complete Home Ban (options a, c, and d combined).

As seen in Table 21a, 83.5% of high school students had a complete home ban on smoking and 16.5% had no home ban. Fewer reported bans on vaping; 69.5% had complete home bans and 30.5% had no home bans (Table 21b).

Table 21 (21a and 21b) also shows the breakdown of smoking and vaping bans by smoking and vaping status. Never smokers were defined as those who had never smoked a cigarette, current smokers were those who had smoked a cigarette in the last 30 days, and former smokers had tried smoking but had not smoked a cigarette in the last 30 days. Likewise, vaping status used the same designations, never vapers, current vapers, and former vapers (Table 21b). Those who had never smoked and those who had never vaped were more likely to have complete home bans than those who currently smoked or currently vaped (84.7% vs. 69.6%, respectively, for smoking and 74.7% vs. 46.9%, respectively, for vaping). Rates of home bans for former smokers and former vapers fell between never and current. More students reported home bans on smoking than on vaping, regardless of smoking or vaping status.

Table 21a. Home bans on smoking among high school students

	Overall N=41391 % (95% CI)	Never smokers N=35658 % (95% CI)	Former smokers N=3908 % (95% CI)	Current smokers N=1825 % (95% CI)
Complete home ban	83.5 (83.0-84.1)	84.7 (84.1-85.2)	79.5 (77.5-81.5)	69.6 (66.4-72.8)
No complete home ban	16.5 (15.9-17.0)	15.3 (14.8-15.9)	20.5 (18.5-22.5)	30.4 (27.2-33.6)

Table 21b. Home bans on vaping among high school students

	Overall N=41238 % (95% CI)	Never vapers N=29230 % (95% CI)	Former vapers N=8514 % (95% CI)	Current vapers N=3494 % (95% CI)
Complete home ban	69.5 (68.8-70.2)	74.7 (73.9-75.4)	61.6 (60.0-63.1)	46.9 (44.4-49.3)
No complete home ban	30.5 (29.8-31.2)	25.3 (24.6-26.1)	38.4 (36.9-40)	53.1 (50.7-55.6)

Table 22 (22a and 22b) provides data on rates of complete home ban on smoking and vaping by ethnicity. Black students were less likely to say they have a complete ban on smoking in the home than Whites, Hispanics, and Asians. Overall, the rates of complete home bans on smoking were 84.3% for Whites, 74.9% for Blacks, 84.9% for Hispanics, 82.8% for Asians, 81.3% for NHOPI, 75.3% for Other, and 80.4% for Multiple. Similar to previous results (Table 21), when stratified by ethnicity, students were generally more likely to have bans on smoking than on vaping, although due to large confidence intervals, not all differences were significant. Again, rates of home bans for former users were generally between that of never and current users.

Table 22a. Complete home ban on smoking by ethnicity among high school students

	Overall N=41172 % (95% CI)	Never smokers N=35473 % (95% CI)	Former smokers N=3891 % (95% CI)	Current smokers N=1808 % (95% CI)
Overall	83.6 (83.0-84.1)	84.7 (84.2-85.3)	79.5 (77.5-81.5)	69.4 (66.2-72.7)
White	84.3 (83.2-85.5)	85.8 (84.6-87.0)	76.1 (71.5-80.8)	77.5 (72.7-82.3)
Black	74.9 (70.8-79.0)	76.1 (71.8-80.3)	66.6 (49.5-83.6)	48.0 (24.9-71.1)
Hispanic	84.9 (84.2-85.7)	86.2 (85.5-87.0)	81.7 (79.2-84.1)	68.1 (63.4-72.7)
Asian	82.8 (81.2-84.4)	83.5 (81.8-85.1)	78.2 (69.6-86.8)	57.0 (40.7-73.3)
NHOPI	81.3 (75.8-86.9)	83.5 (77.5-89.5)	74.5 (58.5-90.5)	59.8 (32.7-86.8)
Other	75.3 (71.4-79.1)	76.3 (72.4-80.3)	62.4 (44.7-80.1)	78.4 (64.9-91.8)
Multiple	80.4 (78.5-82.3)	81.4 (79.3-83.4)	80.1 (74.0-86.1)	64.9 (55.2-74.7)

NHOPI = Native Hawaiian and Other Pacific Islander
Other: See Appendix for definition

Table 22b. Complete home ban on vaping by ethnicity among high school students

	Overall N=41026 % (95% CI)	Never vapers N=29063 % (95% CI)	Former vapers N=8484 % (95% CI)	Current vapers N=3479 % (95% CI)
Overall	69.5 (68.8-70.2)	74.7 (73.9-75.5)	61.5 (60.0-63.1)	47.0 (44.5-49.4)
White	67.6 (66.1-69.0)	73.7 (72.0-75.3)	56.1 (52.3-59.9)	49.2 (45.0-53.4)
Black	67.3 (63.1-71.5)	71.8 (67.1-76.5)	54.7 (44.4-65.0)	41.0 (23.1-59.0)
Hispanic	72.2 (71.3-73.1)	77.9 (76.8-78.9)	65.4 (63.4-67.4)	48.3 (44.7-52.0)
Asian	67.1 (65.1-69.1)	70.4 (68.3-72.5)	53.0 (46.9-59.2)	37.2 (27.9-46.6)
NHOPI	60.5 (53.6-67.4)	69.9 (61.9-77.9)	46.0 (30.4-61.6)	35.0 (17.3-52.7)
Other	65.9 (61.7-70.0)	69.5 (64.8-74.1)	54.8 (45.1-64.5)	54.3 (37.7-70.9)
Multiple	62.0 (59.6-64.5)	68.3 (65.5-71.2)	52.0 (46.5-57.5)	39.9 (32.7-47.0)

NHOPI = Native Hawaiian and Other Pacific Islander

Other: See Appendix for definition

Exposure to Secondhand Cigarette Smoke in the Last 30 Days

Table 23 (23a and 23b) reports on high school students' exposure to secondhand cigarette smoke. The 2015-16 CSTS asked respondents to indicate: *In the last 30 days, how many days were you in a room when someone was smoking a cigarette*? For analysis, the answer options were classified as 0, 1-9, or 10-30 days. A second question asked about exposure to cigarette smoke in a car using the same answer options. Current smokers of cigarettes had higher rates of exposure both in a room and in a car than never and former smokers. Even though exposure was lower for never smokers, over a third (36.4%) of these individuals had been exposed to cigarette smoke in either a room or a car in the last 30 days. Overall, former smokers had higher rates of exposure to secondhand smoke than never smokers, although the rates were lower than those of current smokers.

Table 23a. Last 30 days exposure to cigarette smoke in a room among high school students

	Overall N=41442 % (95% CI)	Never smokers N=35689 % (95% CI)	Former smokers N=3920 % (95% CI)	Current smokers N=1833 % (95% CI)
Any in last 30 days	35.4 (34.7-36.2)	32.8 (32.1-33.6)	44.8 (42.4-47.1)	67.1 (63.8-70.3)
1-9 days	27.5 (26.9-28.2)	26.4 (25.7-27.1)	32.1 (29.9-34.3)	38.9 (35.5-42.3)
10-30 days	7.9 (7.5-8.3)	6.4 (6.0-6.8)	12.6 (11.1-14.2)	28.2 (25.0-31.4)

Table 23b. Last 30 days exposure to cigarette smoke in a car among high school students

	Overall N=41375 % (95% CI)	Never smokers N=35641 % (95% CI)	Former smokers N=3910 % (95% CI)	Current smokers N=1824 % (95% CI)
Any in last 30 days	18.4 (17.8-18.9)	14.7 (14.1-15.3)	31.0 (28.7-33.3)	63.1 (59.7-66.6)
1-9 days	13.3 (12.8-13.8)	11.0 (10.5-11.5)	24.0 (21.8-26.3)	36.1 (32.7-39.4)
10-30 days	5.0 (4.7-5.4)	3.7 (3.4-4.0)	7.0 (5.9-8.0)	27.1 (23.9-30.3)

Table 24 (24a and 24b) shows that there were some differences in exposure of high school students to secondhand cigarette smoke by ethnicity. The large confidence intervals make it difficult to determine significance, especially for current smokers. Rates for former smokers users generally fell between that of never and current smokers.

Table 24a. Last 30 days exposure to cigarette smoke in a room by ethnicity among high school students

	N	Overall % (95% CI)	Never smokers % (95% CI)	Former smokers % (95% CI)	Current smokers % (95% CI)
Overall	41221	35.5 (34.8-36.2)	32.9 (32.1-33.6)	44.8 (42.4-47.1)	67.3 (64.1-70.6)
White	7650	41.3 (39.7-42.8)	38.1 (36.4-39.8)	50.3 (45.1-55.5)	70.2 (64.2-76.3)
Black	1278	32.8 (28.6-37.0)	30.3 (26.0-34.6)	56.2 (39.5-72.8)	69.9 (48.4-91.5)
Hispanic	22193	32.4 (31.4-33.3)	29.5 (28.5-30.6)	41.4 (38.4-44.5)	64.3 (59.6-69.0)
Asian	5126	37.3 (35.3-39.4)	36.4 (34.3-38.5)	47.1 (37.1-57.0)	67.6 (52.7-82.4)

NHOPI	384	37.3 (29.3-45.3)	29.0 (20.0-37.9)	77.8 (65.2-90.5)	78.8 (60.3-97.3)
Other	1016	39.7 (35.3-44.2)	35.9 (31.5-40.3)	42.7 (27.6-57.7)	79.9 (67.3-92.6)
Multiple	3574	41.9 (39.4-44.4)	39.2 (36.5-41.9)	50.2 (42.1-58.3)	70.7 (62.0-79.3)

NHOPI = Native Hawaiian and Other Pacific Islander
Other: See Appendix for definition

Table 24b. Last 30 days exposure to cigarette smoke in a car by ethnicity among high school students

	N	Overall % (95% CI)	Never smokers % (95% CI)	Former smokers % (95% CI)	Current smokers % (95% CI)
Overall	41156	18.4 (17.8-18.9)	14.7 (14.1-15.3)	31.0 (28.7-33.3)	63.4 (60.0-66.8)
White	7643	21.1 (19.8-22.4)	16.2 (15.0-17.4)	34.3 (29.2-39.3)	68.5 (62.5-74.4)
Black	1276	18.8 (15.5-22.0)	16.2 (13.0-19.5)	35.6 (18.9-52.4)	82.6 (64.1-100.0)
Hispanic	22152	17.8 (17.0-18.6)	14.1 (13.3-14.9)	29.7 (26.7-32.7)	59.6 (54.6-64.6)
Asian	5119	13.4 (12.0-14.9)	11.9 (10.5-13.3)	29.9 (20.5-39.4)	60.2 (44.3-76.0)
NHOPI	384	26.8 (18.9-34.8)	19.3 (10.6-28.1)	58.8 (40.4-77.3)	77.8 (58.5-97.0)
Other	1011	24.5 (20.4-28.7)	19.6 (16.0-23.2)	27.8 (15.6-40.0)	77.0 (62.9-91.1)
Multiple	3571	21.6 (19.4-23.8)	18.0 (15.7-20.4)	30.4 (23.4-37.3)	64.1 (54.6-73.6)

NHOPI = Native Hawaiian and Other Pacific Islander
Other: See Appendix for definition

Offered Tobacco in the Last 30 Days

In addition to assessing use of various products, the 2015-16 CSTS assessed whether high school students were offered e-cigarettes, cigarettes, LCC, or hookah by asking: *In the last 30 days, has anyone offered you…* Table 25 compares offers of tobacco products to those who had never used the product, had formerly used the product, and among those who used the product in the last 30 days. Overall, almost 27% of students reported being offered at least one of the products in the last 30 days. Over 12% of students who had never used any of the products reported being offered at least one of the products in the last 30 days, with the most offers of hookah (9.1%).

Table 25. Offers of tobacco products within the last 30 days among high school students

	Overall N=41559 % (95% CI)	Never user of the product N=37253 % (95% CI)	Former user of the product N=10442 % (95% CI)	Current user of the product N=5503 % (95% CI)
Any of the below	26.8 (26.1-27.4)	12.4 (11.8-13.0)	33.8 (32.4-35.2)	81.1 (79.6-82.6)
E-cigarettes	16.2 (15.7-16.7)	6.9 (6.4-7.3)	24.3 (22.9-25.6)	72.3 (70.1-74.6)
Cigarettes	11.5 (11.0-12.0)	6.1 (5.7-6.5)	28.3 (26.1-30.4)	81.3 (78.7-84.0)
LCC*	7.3 (6.9-7.7)	3.3 (3.0-3.5)	25.1 (22.3-27.9)	68.8 (65.6-71.9)
Hookah	15.6 (15.1-16.2)	9.1 (8.6-9.5)	31.9 (30.0-33.7)	78.9 (76.1-81.8)

*LCC=little cigars and cigarillos

Offers of Tobacco by Demographics

Table 26 shows the differences in offers of any of the four products (e-cigarettes, cigarettes, LCC, and hookah) by demographics of high school students. Across all demographic categories, current users were more likely than never users to have been offered at least one product in the last 30 days, while former users fell somewhere in between. Overall, male students were significantly more likely to be offered products than female students. Asians who had never used any of the products were the ethnic/racial group least likely to report being offered tobacco. Older students were more likely to be offered tobacco products than younger students. Among students who had never tried any of the products, nearly 14% of 12th graders said they were offered cigarettes, LCC, hookah, or e-cigarettes in the last 30 days.

Table 26. Offers of tobacco within the last 30 days by gender, ethnicity, and grade among high school students

		Overall	Never users of any product*	Former users of any product*	Current users of any product*
	N	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Overall	41559	26.8 (26.1-27.4)	12.4 (11.8-13.0)	33.8 (32.4-35.2)	81.1 (79.6-82.6)
Gender					
Male	20685	28.2 (27.3-29.2)	13.4 (12.5-14.3)	33.0 (30.9-35.1)	80.3 (78.3-82.3)
Female	20768	25.2 (24.4-26.1)	11.4 (10.6-12.2)	34.4 (32.4-36.3)	82.3 (79.9-84.7)
Ethnicity					
White	7659	32.7 (31.2-34.2)	13.2 (11.8-14.7)	43.1 (39.4-46.7)	88.5 (86.4-90.7)
Black	1283	23.9 (20.0-27.7)	14.5 (10.0-19.0)	26.8 (19.5-34.1)	76.1 (65.0-87.1)
Hispanic	22268	27.8 (26.9-28.8)	13.5 (12.6-14.4)	33.2 (31.4-35.0)	78.5 (76.3-80.8)
Asian	5133	13.4 (12.0-14.8)	6.9 (5.7-8.1)	26.5 (21.5-31.4)	78.3 (71.5-85.0)
NHOPI	385	23.4 (17.7-29.1)	8.7 (4.5-13.0)	27.0 (14.7-39.4)	75.9 (61.0-90.8)
Other	1020	30.1 (25.9-34.4)	15.1 (11.3-18.8)	27.0 (19.3-34.6)	81.0 (72.2-89.8)
Multiple	3585	29.6 (27.3-31.8)	14.0 (11.6-16.4)	34.5 (29.8-39.3)	82.4 (78.1-86.7)
Grade					
Grade 10	21989	23.0 (22.1-23.8)	11.2 (10.4-12.0)	32.6 (30.5-34.7)	80.4 (77.9-82.8)
Grade 12	19570	30.9 (29.9-31.9)	13.9 (12.9-14.9)	35.0 (33.1-36.9)	81.6 (79.7-83.5)

*Four products: e-cigarettes, cigarettes, little cigars or cigarillos, and hookah
NHOPI = Native Hawaiian and Other Pacific Islander
Other: See Appendix for definition

Summary

This chapter examined the tobacco environment of students. It assessed the rules associated with smoking and vaping in the home, the exposure of students to secondhand smoke and e-cigarette vapor, and whether anyone is offering students these products. Although the ban against smoking in the home was generally high, there were fewer bans on vaping in the home. Over a third of high school students who had never used cigarettes were nonetheless exposed to secondhand smoke in the last 30 days (36.4%). Perhaps most problematic is that about one in eight high school students who had never used any tobacco products had been offered them in the last 30 days. Among high school students, the most commonly offered products were hookah (9.1%), e-cigarettes (6.9%), and cigarettes (6.1%).

CHAPTER 4 – Attitude and Risk Perceptions of E-cigarettes

This chapter focuses on how students perceive e-cigarettes in the 2015-16 California Student Tobacco Survey (CSTS). It examines student opinions about whether e-cigarettes should be used in areas where smoking is not allowed, how harmful they believe them to be, and what they believe are the reasons why e-cigarettes are used by people their age.

Opinions

Students were asked whether they strongly agreed, somewhat agreed, somewhat disagreed, or strongly disagreed with a number of statements about e-cigarettes, which were dichotomized into agreed or disagreed. Table 27 indicates the percent of high school students who agreed with the statements. Those who had never used e-cigarettes had less favorable views of them. Never users were less likely than current and former users to think e-cigarettes should be allowed in indoor spaces and more likely to say both that e-cigarette vapor is harmful and that e-cigarettes are as addictive as cigarettes. Current users were more likely to view e-cigarettes favorably than never users, while former users' opinions fell between the two groups.

Table 27. Opinions of e-cigarettes among high school students

	Overall N=41353 % (95% CI)	Never e-cigarette users N=29308 % (95% CI)	Former e-cigarette users N=8533 % (95% CI)	Current e-cigarette users N=3512 % (95% CI)
E-cigarettes should be allowed in indoor spaces such as malls and theaters.	24.8 (24.1-25.4)	17.1 (16.4-17.7)	36.0 (34.5-37.6)	59.6 (57.2-62.0)
The vapor (steam) from e-cigarettes is harmful.	57.2 (56.5-58.0)	64.0 (63.2-64.9)	44.6 (43.0-46.2)	32.9 (30.5-35.2)
E-cigarettes are just as addictive as regular cigarettes.	68.1 (67.4-68.8)	76.2 (75.4-77.0)	52.4 (50.8-54.1)	40.5 (38.0-42.9)

Reasons

Table 28 presents information on perceived reasons for use of e-cigarettes by youth. High school students were asked how much they agreed with the statements: *People my age use e-cigarettes because….* Almost 85% of high school students who currently use e-cigarettes and 74.2% of those who had never used them report that flavor is a reason people their age use e-cigarettes. About three quarters of students also thought young people used e-cigarettes because they looked interesting and cool. Current users were much more likely than never users to agree with the statements that e-cigarettes are healthier than cigarettes and help people quit smoking.

Table 28. Reasons for using e-cigarettes among high school students

	Overall N=41157 % (95% CI)	Never e-cigarette users N=29148 % (95% CI)	Former e-cigarette users N=8519 % (95% CI)	Current e-cigarette users N=3495 % (95% CI)
They come in lots of flavors.	77.2 (76.5-77.8)	74.2 (73.5-75.0)	83.9 (82.5-85.2)	84.5 (82.6-86.4)
They look interesting and cool.	74.5 (73.8-75.1)	74.3 (73.5-75.1)	75.4 (74.0-76.9)	73.6 (71.3-75.8)
They are cheaper than cigarettes.	54.7 (54.0-55.5)	56.1 (55.3-57.0)	50.7 (49.1-52.3)	53.2 (50.7-55.7)
They are healthier than cigarettes.	58.8 (58.1-59.6)	54.9 (54.0-55.7)	65.0 (63.4-66.6)	75.8 (73.6-78.1)
They help people quit smoking.	46.7 (46.0-47.5)	41.0 (40.2-41.9)	56.6 (55.0-58.3)	68.4 (66.1-70.8)

Summary

A contributing factor to the use of e-cigarettes is how they are perceived.[4,5] Most students believed that vaping should not be allowed in indoor areas. Most high school students who had never used e-cigarettes thought they were just as addictive as regular cigarettes. Many students, whether they had tried e-cigarettes or not, thought that young people were attracted to e-cigarettes by the flavors and because they *look interesting and cool*.

CHAPTER 5 – Geographic Differences

This chapter examines the prevalence of tobacco products by geographic location in the 2015-16 California Student Tobacco Survey (CSTS). There are many ways to group the data. First, we report by urban classification, a designation that has been used by the U.S. Department of Education to identify schools as located in city, suburban, town, or rural areas.[6] Second, we analyze by four California regions (Northern, Central, Greater Bay, and Southern). Third, we analyzed regions that correspond to the Priority Populations Initiative (PPI), an effort by the Califoria Department of Public Health which aimed to reduce tobacco-related disparities.[7] Lastly, we analyzed 12 regions that correspond to the CSTS 2015-16 sampling scheme.

It should be noted that the total number of schools in the survey is only 117. The original sampling design was not set up for regional analysis except for the 12 regions that were in the original CSTS sample. However, even for the 12 regions in the original CSTS sample, the number of participating schools in many regions was too small. Thus, the results reported in this chapter need to be intepreted with caution.

Urban classification

Each school was identified as being located in a city, suburban, rural, or town area. For analytic purposes, rural and town were collapsed.

Table 29 examines the use of products among high school students by urban classification. Overall, city students had the lowest likelihood of using various tobacco products and rural/town students had the greatest likelihood. However, due to the small sample size, many of the differences were not significant. The most striking difference in the analysis of urban classification is the use of smokeless tobacco. Students in rural/town areas were about twice as likely to use smokeless as those in the suburbs and 2.5 times more likely to use it as students in cities.

Table 29. Current use of products by urban classification among high school students

	City N=14652 % (95% CI)	Suburban N=21562 % (95% CI)	Rural & Town N=5582 % (95% CI)
Any of the below	12.7 (11.8-13.6)	13.8 (13.2-14.5)	15.1 (13.6-16.6)
E-cigarettes	8.0 (7.3-8.7)	9.0 (8.5-9.6)	8.4 (7.2-9.5)
Cigarettes	3.7 (3.2-4.2)	4.7 (4.3-5.1)	4.3 (3.4-5.2)
Big cigars	1.4 (1.1-1.7)	1.5 (1.3-1.8)	2.3 (1.6-3.0)
LCC*	4.0 (3.5-4.6)	4.1 (3.8-4.5)	6.3 (5.1-7.4)
Kreteks	1.0 (0.8-1.3)	1.1 (0.9-1.3)	1.8 (1.3-2.4)
Hookah	4.0 (3.5-4.5)	5.0 (4.6-5.4)	5.8 (4.8-6.8)
Smokeless	1.3 (1.0-1.5)	1.7 (1.5-1.9)	3.3 (2.6-3.9)

*LCC=little cigars and cigarillos

Table 30 shows that susceptibility to tobacco use was unrelated to whether students live in cities, suburbs, or town/rural areas.

Table 30. Susceptibility by urban classification among high school students

	Susceptibility to any of four products*	
	N	% (95% CI)
Overall	25580	27.5 (26.6-28.3)
Geography		
City	9099	29.1 (27.5-30.8)
Suburban	13144	26.5 (25.4-27.6)
Town & Rural	3337	27.7 (25.4-30.0)

*Four products: e-cigarettes, cigarettes, little cigars or cigarillos, and hookah

There were no significant differences in whether students were offered tobacco by urban classification (Table 31).

Table 31. Offers of tobacco by urban classification among high school students

		Never users of any product*	Former users of any product*	Current users of any product*
	N	% (95% CI)	% (95% CI)	% (95% CI)
Overall	41559	12.4 (11.8-13.0)	33.8 (32.4-35.2)	81.1 (79.6-82.6)
Geography				
City	14526	12.0 (10.8-13.1)	31.7 (29.3-34.2)	77.7 (74.4-80.9)
Suburban	21469	12.5 (11.7-13.3)	35.1 (33.2-37.0)	82.6 (80.8-84.5)
Town & Rural	5564	12.9 (11.2-14.6)	33.7 (30.0-37.4)	82.7 (79.1-86.4)

*Four products: e-cigarettes, cigarettes, little cigars or cigarillos, and hookah

Four regions: Northern, Central, Greater Bay, Southern

Figure 5 and Table 32 show which counties fall into the 4 regions of California: Northern, Central, Greater Bay, and Southern California.

Figure 5. Northern, Central, Greater Bay, and Southern regions of California

Table 32. Counties by 4 regions

Region	Counties
Northern	Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, El Dorado, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Sutter, Tehama, Tuolumne, Trinity, Yolo, Yuba
Central	Fresno, Inyo, Kern, Kings, Madera, Mariposa, Merced, Mono, Stanislaus, Tulare
Greater Bay	Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma
Southern	Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, Ventura

Table 33 shows that Northern California has higher current tobacco use among high school students than the other regions. The rate of current tobacco use for Central California is significantly higher than for Southern California, although not different than in the Greater Bay area.

Table 33. Tobacco use by 4 regions among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	41803	38.8 (38.1-39.5)	13.6 (13.1-14.1)
Northern	2701	39.8 (37.3-42.4)	17.8 (15.8-19.9)
Central	5640	45.8 (44.0-47.5)	14.8 (13.6-16.1)
Greater Bay	11090	37.3 (36.0-38.7)	13.2 (12.3-14.1)
Southern	22372	38.0 (37.0-39.0)	13.0 (12.4-13.7)

Table 34 shows that there are regional differences in use of tobacco products, most notably in smokeless tobacco. Rates of use of smokeless tobacco among high school students statewide is considerably higher in Northern California (4.8%) than in Central (2.3%), Greater Bay (1.5%), and Southern (1.3%) California.

Table 34. Current use of products by 4 regions among high school students

	Northern N=2700 % (95% CI)	Central N=5640 % (95% CI)	Greater Bay N=11088 % (95% CI)	Southern N=22368 % (95% CI)
Any of the below	17.8 (15.8-19.9)	14.8 (13.6-16.1)	13.2 (12.3-14.1)	13.0 (12.4-13.7)
E-cigarettes	9.8 (8.2-11.4)	8.1 (7.1-9.0)	8.2 (7.4-8.9)	8.8 (8.2-9.3)
Cigarettes	6.1 (4.8-7.3)	3.4 (2.8-4.1)	3.8 (3.3-4.3)	4.5 (4.1-4.9)
Big cigars	3.4 (2.4-4.5)	1.3 (0.9-1.7)	1.4 (1.1-1.7)	1.4 (1.2-1.7)
LCC*	7.7 (6.1-9.3)	4.8 (4.1-5.6)	5.1 (4.5-5.7)	3.6 (3.2-3.9)
Kreteks	1.6 (0.8-2.3)	1.4 (1.0-1.9)	1.0 (0.7-1.3)	1.1 (0.9-1.3)
Hookah	5.7 (4.4-7.1)	5.9 (5.1-6.7)	4.0 (3.5-4.5)	4.7 (4.3-5.2)
Smokeless	4.8 (3.8-5.7)	2.3 (1.8-2.8)	1.5 (1.2-1.8)	1.3 (1.1-1.6)

*LCC=little cigars and cigarillos

Twelve regions: CSTS 2015-16 sampling

Figure 6 and Tables 35, 36, 37a and 37b present data based on the 2015-16 CSTS sampling scheme in which the state of California was divided into 12 regions. These regions correspond to the sample design for previous CSTS administration and to that used for the California Tobacco Survey.

Figure 6. Counties by CSTS 2015-16 regions

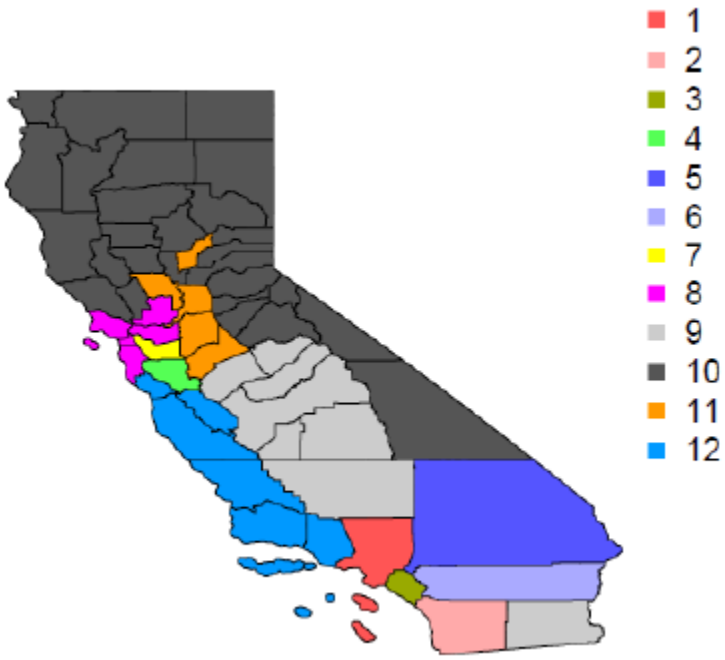


Table 35. Counties by CSTS 2015-16 region

CSTS Region	Counties
1	Los Angeles
2	San Diego
3	Orange
4	Santa Clara
5	San Bernardino
6	Riverside
7	Alameda
8	Contra Costa, Marin, San Francisco, San Mateo, Solano
9	Fresno, Imperial, Kern, Kings, Madera, Mariposa, Merced, Tulare
10	Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, El Dorado, Glenn, Humboldt, Inyo, Lake, Lassen, Mendocino, Modoc, Mono, Napa, Nevada, Placer, Pumas, Shasta, Sierra, Siskiyou, Sonoma, Sutter, Tehama, Trinity, Tuolumne
11	Sacramento, San Joaquin, Stanislaus, Yolo, Yuba
12	Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Ventura

Current use of tobacco by high school students range from a low of 10.8% in Region 1 to a high of 22.0% in Region 10. As the state is divided into more regions, the sample sizes for most regions decrease. As a result, the 95% confidence intervals increase and it becomes more difficult to interpret the differences.

Table 36. Tobacco use by CSTS region among high school students

CSTS Region	Counties	N	Ever use % (95% CI)	Current use % (95% CI)
Overall		41803	38.8 (38.1-39.5)	13.6 (13.1-14.1)
1	Los Angeles	4773	34.2 (32.6-35.8)	10.8 (9.7-11.9)
2	San Diego	2891	39.4 (37.3-41.5)	12.4 (11.0-13.8)
3	Orange	4508	34.6 (32.9-36.4)	15.3 (14.0-16.7)
4	Santa Clara	502	37.8 (33.6-42.1)	12.2 (9.3-15.0)
5	San Bernardino	574	48.4 (43.1-53.7)	16.0 (12.3-19.6)
6	Riverside	5253	41.1 (39.5-42.7)	14.4 (13.3-15.5)
7	Alameda	366	32.0 (26.9-37.1)	10.2 (7.0-13.3)
8	Contra Costa, Marin, San Francisco, San Mateo, Solano	3949	33.2 (31.4-35.0)	12.5 (11.2-13.8)
9	Fresno, Imperial, Kern, Kings, Madera, Mariposa, Merced, Tulare	2773	48.2 (46.1-50.4)	15.3 (13.8-16.8)
10	Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, El Dorado, Glenn, Humboldt, Inyo, Lake, Lassen, Mendocino, Modoc, Mono, Napa, Nevada, Placer, Pumas, Shasta, Sierra, Siskiyou, Sonoma, Sutter, Tehama, Trinity, Tuolumne	2329	47.0 (44.4-49.7)	22.0 (19.8-24.2)
11	Sacramento, San Joaquin, Stanislaus, Yolo, Yuba	8749	37.9 (36.6-39.2)	14.3 (13.3-15.3)
12	Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Ventura	5136	42.7 (41.1-44.3)	14.5 (13.3-15.6)

Tables 37a and 37b provide the rates of current use of each tobacco product. As in Table 36, confidence intervals are relatively large, making interpretation of differences difficult.

Table 37a. Current use of tobacco products by CSTS region among high school students

CSTS Region	Counties	N	E-cigarettes % (95% CI)	Cigarettes % (95% CI)	Big cigars % (95% CI)
1	Los Angeles	4772	6.5 (5.7-7.4)	3.6 (2.9-4.2)	1.2 (0.8-1.6)
2	San Diego	2889	7.2 (6.1-8.3)	4.4 (3.5-5.3)	1.4 (0.8-2.0)
3	Orange	4507	12.3 (11.1-13.6)	5.3 (4.4-6.2)	1.5 (1.0-2.0)
4	Santa Clara	502	7.5 (5.2-9.8)	2.3 (1.0-3.6)	0.9 (0.0-1.7)
5	San Bernardino	574	14.0 (10.4-17.6)	6.0 (3.6-8.3)	1.7 (0.3-3.2)
6	Riverside	5253	9.0 (8.1-9.9)	4.1 (3.5-4.7)	1.9 (1.5-2.3)
7	Alameda	366	4.9 (2.6-7.1)	4.2 (2.2-6.2)	1.5 (0.2-2.8)
8	Contra Costa, Marin, San Francisco, San Mateo, Solano	3949	8.3 (7.2-9.4)	3.9 (3.1-4.6)	1.2 (0.8-1.7)
9	Fresno, Imperial, Kern, Kings, Madera, Mariposa, Merced, Tulare	2773	9.1 (7.9-10.3)	5.3 (4.4-6.2)	1.3 (0.9-1.8)
10	Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, El Dorado, Glenn, Humboldt, Inyo, Lake, Lassen, Mendocino, Modoc, Mono, Napa, Nevada, Placer, Pumas, Shasta, Sierra, Siskiyou, Sonoma, Sutter, Tehama, Trinity, Tuolumne	2329	14.1 (12.3-15.9)	7.7 (6.3-9.1)	3.9 (2.8-5.0)
11	Sacramento, San Joaquin, Stanislaus, Yolo, Yuba	8747	7.0 (6.3-7.7)	3.1 (2.6-3.6)	1.7 (1.3-2.1)
12	Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Ventura	5135	10.0 (8.9-11.0)	4.4 (3.7-5.0)	1.4 (1.0-1.8)

Table 37b. Current use of tobacco products by CSTS region among high school students

CSTS Region	Counties	N	LCC* % (95% CI)	Kreteks % (95% CI)	Hookah % (95% CI)	Smokeless % (95% CI)
1	Los Angeles	4772	3.2 (2.6-3.8)	0.9 (0.6-1.3)	4.1 (3.4-4.7)	1.0 (0.7-1.3)
2	San Diego	2889	2.7 (2.0-3.3)	0.8 (0.4-1.3)	6.4 (5.3-7.4)	1.2 (0.7-1.7)
3	Orange	4507	3.6 (2.9-4.3)	1.0 (0.6-1.4)	3.3 (2.6-3.9)	1.2 (0.8-1.7)
4	Santa Clara	502	4.3 (2.6-6.1)	0.8 (0.0-1.6)	2.3 (1.0-3.6)	0.4 (0.0-1.1)
5	San Bernardino	574	4.8 (2.8-6.8)	1.7 (0.2-3.2)	5.6 (3.2-8.0)	1.6 (0.7-2.6)
6	Riverside	5253	4.4 (3.8-5.0)	1.5 (1.2-1.8)	6.2 (5.5-7.0)	2.0 (1.6-2.4)
7	Alameda	366	5.8 (3.3-8.4)	1.5 (0.2-2.8)	2.2 (0.7-3.6)	1.7 (0.4-3.0)
8	Contra Costa, Marin, San Francisco, San Mateo, Solano	3949	4.9 (4.0-5.7)	0.5 (0.2-0.8)	4.5 (3.7-5.4)	0.7 (0.4-1.0)
9	Fresno, Imperial, Kern, Kings, Madera, Mariposa, Merced, Tulare	2773	5.2 (4.2-6.1)	1.9 (1.4-2.5)	4.5 (3.7-5.4)	1.6 (1.1-2.1)
10	Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, El Dorado, Glenn, Humboldt, Inyo, Lake, Lassen, Mendocino, Modoc, Mono, Napa, Nevada, Placer, Pumas, Shasta, Sierra, Siskiyou, Sonoma, Sutter, Tehama, Trinity, Tuolumne	2329	9.0 (7.3-10.7)	1.9 (1.1-2.7)	6.4 (5.0-7.8)	6.2 (5.1-7.3)
11	Sacramento, San Joaquin, Stanislaus, Yolo, Yuba	8747	4.5 (3.9-5.1)	1.1 (0.8-1.3)	6.6 (6.0-7.3)	2.6 (2.1-3.0)
12	Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Ventura	5135	3.8 (3.2-4.4)	0.9 (0.7-1.2)	4.1 (3.5-4.7)	2.0 (1.5-2.5)

*LCC=little cigars and cigarillos

Eleven regions: Priority Population Initiative

The California Department of Public Health's California Tobacco Control Program issued a request for applications designed to mobilize communities to reduce tobacco-related disparitities among several priority populations. The Priority Populaiton Initiative (PPI) targeted disparities among African American/Black; Asian/Pacific Islander; Hispanic/Latino; and Lesbian, Gay, Bisexual, Transgender, Queer populations. California's 12 media markets were collapsed into 11 regions, which were then coded based on whether they had a "substantial cluster" of the targeted populations.[7]

Table 38 indicates which counties were in each region and which priority populations were considered to have a cluster.

Table 38. Counties by Priority Population Initiative (PPI) region among high school students

Region	Counties	Priority Populations*
Bay Area	Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, Solano	African American/Black Asian/Pacific Islander Hispanic/Latino LGBTQ
Central Coast	Monterey, San Benito, Santa Cruz	Hispanic/Latino
Central Valley	Fresno, Kern, Kings, Madera, Mariposa, Merced, Tulare	African American/Black Asian/Pacific Islander Hispanic/Latino
Gold Country	Alpine, Amador, Calaveras, El Dorado, Inyo, Mono, Nevada, Placer, Sacramento, San Joaquin, Stanislaus, Sutter, Tuolumne, Yolo	African American/Black Asian/Pacific Islander Hispanic/Latino LGBTQ
High Country	Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	None
Los Angeles	Los Angeles	African American/Black Asian/Pacific Islander Hispanic/Latino LGBTQ
North Coast	Del Norte, Humboldt, Lake, Mendocino, Napa, Sonoma	Hispanic/Latino
North Valley	Butte, Colusa, Glenn, Shasta, Tehama, Yuba	Hispanic/Latino
South Coast	Orange, San Diego	African American/Black Asian/Pacific Islander Hispanic/Latino LGBTQ
Tri-County	San Luis Obispo, Santa Barbara, Ventura	Hispanic/Latino
Tri-County South	Imperial, Riverside, San Bernardino	African American/Black Asian/Pacific Islander Hispanic/Latino LGBTQ

Note: Not every priority population in the region has been funded because either CDPH did not received application or the submitted application did not pass the review.

Tables 39 and 40 show the use of tobacco overall and the use of specific tobacco products by PPI region.

Table 39. Tobacco use by Priority Population Initiative (PPI) region among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	41802	38.8 (38.1-39.5)	13.6 (13.1-14.1)
Bay Area	4817	34.3 (32.3-36.2)	11.9 (10.6-13.1)
Central Coast	1934	42.1 (39.8-44.4)	11.2 (9.8-12.7)
Central Valley	1602	48.1 (45.6-50.7)	14.0 (12.2-15.8)
Gold Country	9766	40.1 (38.8-41.3)	16.5 (15.5-17.5)
High Country	0	--	--
Los Angeles	4773	34.2 (32.6-35.8)	10.8 (9.7-11.9)
North Coast	1074	47.0 (43.8-50.2)	23.1 (20.3-26.0)
North Valley	238	45.6 (37.3-53.8)	16.1 (9.5-22.7)
South Coast	7399	37.2 (35.8-38.6)	13.7 (12.8-14.7)
Tri-County	3202	43.1 (40.9-45.3)	16.8 (15.0-18.5)
Tri-County South	6998	44.9 (42.6-47.2)	15.7 (14.2-17.3)

Table 40. Current use of tobacco products by Priority Population Initiative (PPI) region among high school students

	N	E-cigarettes % (95% CI)	Cigarettes % (95% CI)	Big cigars % (95% CI)	LCC* % (95% CI)	Kreteks % (95% CI)	Hookah % (95% CI)	Smokeless % (95% CI)
Bay Area	4817	7.3 (6.2-8.3)	3.5 (2.8-4.2)	1.2 (0.7-1.6)	5.0 (4.1-5.8)	0.8 (0.4-1.2)	3.3 (2.7-4.0)	0.9 (0.5-1.2)
Central Coast	1933	6.8 (5.6-7.9)	3.3 (2.5-4.1)	1.0 (0.6-1.5)	4.0 (3.1-4.9)	0.9 (0.5-1.3)	3.8 (2.9-4.7)	1.4 (0.9-1.9)
Central Valley	1602	8.2 (6.8-9.6)	3.7 (2.7-4.7)	1.1 (0.6-1.7)	5.2 (4.1-6.3)	1.7 (1.0-2.4)	4.1 (3.1-5.1)	1.5 (0.8-2.1)
Gold Country	9764	8.6 (7.9-9.4)	4.2 (3.7-4.8)	2.4 (2.0-2.8)	5.7 (5.1-6.3)	1.4 (1.0-1.7)	7.0 (6.3-7.7)	4.0 (3.4-4.6)
High Country	0	--	--	--	--	--	--	--
Los Angeles	4772	6.5 (5.7-7.4)	3.6 (2.9-4.2)	1.2 (0.8-1.6)	3.2 (2.6-3.8)	0.9 (0.6-1.3)	4.1 (3.4-4.7)	1.0 (0.7-1.3)
North Coast	1074	18.2 (15.6-20.9)	7.7 (5.8-9.5)	3.3 (2.0-4.5)	7.4 (5.6-9.2)	1.5 (0.7-2.4)	3.4 (2.2-4.7)	5.2 (3.7-6.8)
North Valley	238	8.1 (3.0-13.2)	6.5 (2.3-10.8)	2.9 (0.0-6.3)	9.0 (3.5-14.6)	1.5 (0.0-3.9)	6.7 (2.0-11.4)	1.6 (0.3-2.9)
South Coast	7396	9.6 (8.7-10.4)	4.8 (4.1-5.4)	1.5 (1.1-1.8)	3.1 (2.6-3.6)	0.9 (0.6-1.2)	4.9 (4.3-5.6)	1.2 (0.9-1.5)
Tri-County	3202	12.3 (10.7-13.9)	5.1 (4.2-6.1)	1.6 (1.0-2.2)	3.7 (2.8-4.6)	1.0 (0.6-1.4)	4.3 (3.4-5.1)	2.5 (1.7-3.3)
Tri-County South	6998	11.4 (9.9-12.9)	5.8 (4.7-6.8)	1.9 (1.3-2.5)	4.6 (3.8-5.5)	1.7 (1.1-2.4)	6.0 (5.0-7.0)	1.9 (1.5-2.3)

*LCC=little cigars and cigarillos

CHAPTER 6 – Trends of Tobacco Use among High School Students

To provide a larger context for understanding the results of the 2015-16 California Student Tobacco Survey (CSTS), we compared tobacco prevalence rates over time and across surveys. The first section examines the changes in tobacco prevalence among high school students over time within the cross-sectional CSTS (from 2001-02 to 2015-16). For these analyses, tobacco use included use of cigarettes, smokeless tobacco, and cigars, as these were the only products that were asked consistently across the survey years. E-cigarette use was not measured until the 2015-16 CSTS.

The second section compares the CSTS data from high school students with data from another statewide survey, the California Healthy Kids Survey (CHKS). The CHKS is also a school-based survey of youth, but surveys 9th and 11th graders rather than 10th and 12th graders as the CSTS does. Due to differences in the lists of tobacco products assessed in these two surveys, the analyses are limited to cigarette smoking rather than general tobacco use.

The last section provides additional context by comparing changes in prevalence over time in the CSTS survey to those found in two nationally representative surveys of high school students, Monitoring the Future (MTF) and the National Youth Tobacco Survey (NYTS). The analyses also focused only on cigarette smoking prevalence.

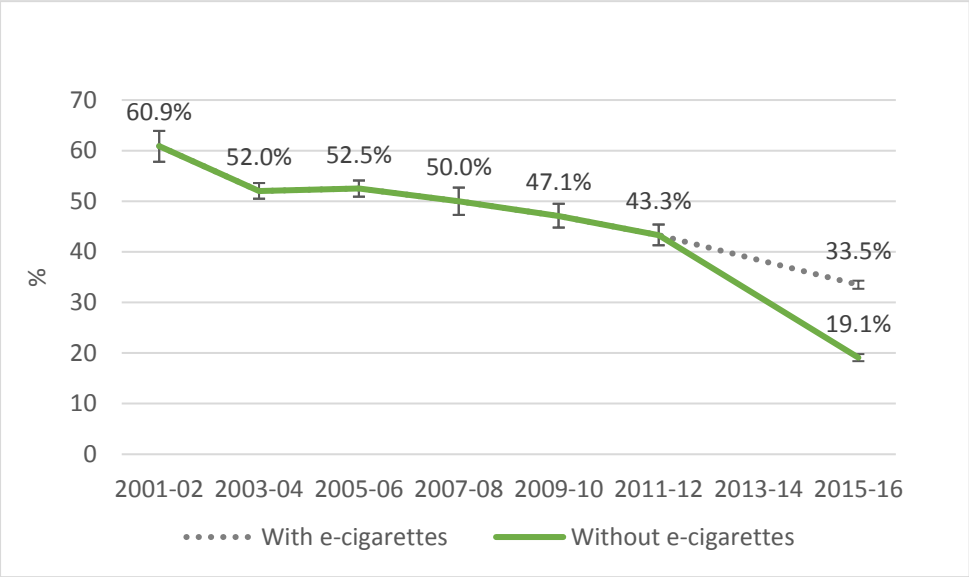
CSTS Trends (2001-02 to 2015-16)

Figures 7-8 examine the trend in use of tobacco among high school students from 2001-02 to 2015-16 using the cross-sectional CSTS (grades 10 and 12). These analyses used the first survey year to standardize the estimates for age and ethnicity. Note that there was no CSTS survey conducted in 2013-14; the prevalence value at 2013-14 is an estimate. Note also that e-cigarettes were not included in the survey until 2015-16.

Figure 7 shows the trend for ever use of tobacco. Ever use of tobacco is defined as use of any tobacco products within a lifetime, including cigarette, cigar, and smokeless tobacco. There was a significant decline in ever use of tobacco from 2001-02 to 2003-04. The rate of decline then slows down until 2009-10. From 2019-10 onward, the decline became significant again, especially after 2011-12. From 2009-10 to 2015-16, the ever use rate declined from 47.1% to 19.1% (a decrease of 59%).

The gray dotted line shows that when e-cigarettes are included in the 2015-16 definition of tobacco use, the decline is more modest but still highly significant; from 47.5% to 33.5% (a decrease of 29%). This, of course, assumes no one was using e-cigarettes in 2009-10. Although e-cigarette use was unlikely to be zero during 2009-10, it is assumed to be very low based on the known national figure from the 2011 NYTS of 1.5% for youth.[8] There were no measures of e-cigarette use in 2009-10.

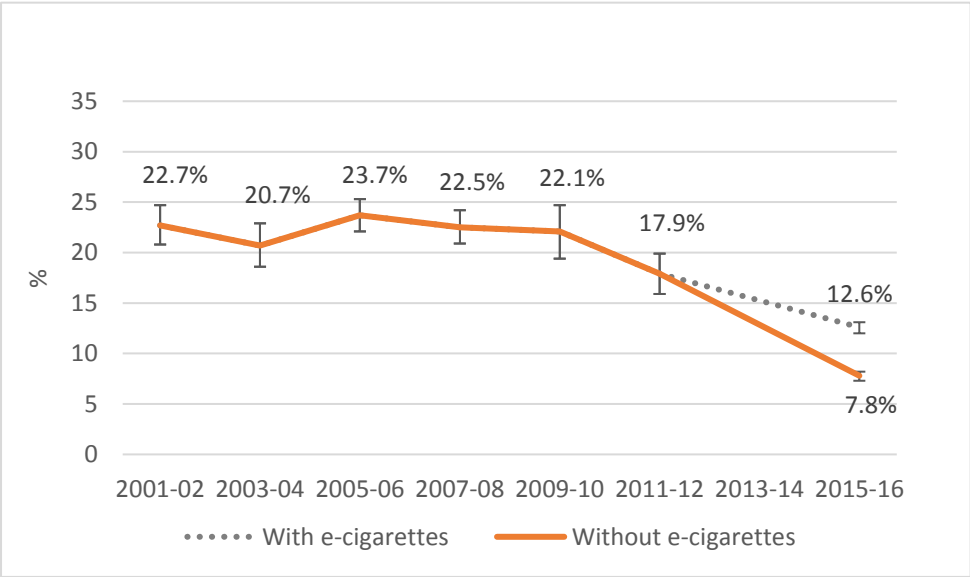
Figure 7. Ever use of tobacco by high school students



CSTS = California Student Tobacco Survey

Figure 8 repeats the analyses for current use of tobacco, which is defined as use of any tobacco products in the last 30 days. The pattern for current tobacco use was even clearer than that of ever use in Figure 7. From 2001-02 to 2009-10, prevalence rates of tobacco use for high school students remained in the range of 20.7% to 23.7%, with no statistically significant differences. From 2009-10 to 2011-12, there was a significant drop (22.1% to 17.9%, respectively). Then there was a further drop to 2015-16. Overall, from 2009-10 to 2015-16 tobacco use prevalence decreased from 22.1% to 7.8% (65% drop), or 12.6% (43% drop) when e-cigarettes are included in the definition of tobacco use (again, this assumed no one used e-cigarettes in 2009-2010).

Figure 8. Current use of tobacco by high school students



CSTS = California Student Tobacco Survey

CSTS vs. CHKS Trends (2001-02 to 2015-16)

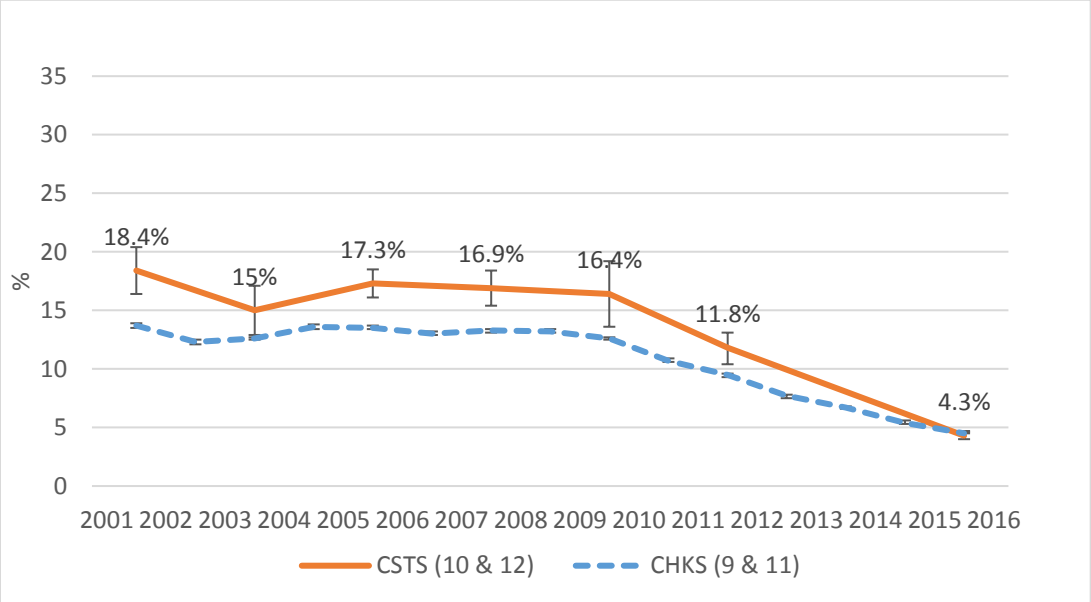
This section compares the trends found in the CSTS to those found in the CHKS. Analysis was limited to cigarette smoking because the CSTS and CHKS gather information on different tobacco products, but both asked about ever use and current use of cigarettes (use within the last 30 days). The CSTS and CHKS both included middle school students, but for clarity, these analyses only include high school students (9th-12th graders). Table 41 provides information about the survey parameters and the grades included in the analysis.

Table 41. Survey parameters for state comparison

	Years	Frequency	Grades	Region
CSTS	2001-2016	biennial	10, 12	State
CHKS	2001-2016	annual	9, 11	State

Figure 9 reflects the current use of cigarettes among high school students (grades 9-12). Smoking prevalence increases by age. Given that the students taking the CHKS were younger (9th and 11th grade) than those taking the CSTS (10th and 12th grade) on average, it is not surprising that the prevalence rates are lower for the CHKS. Still, both surveys showed that current smoking prevalence rates were relatively stable from about 2003 to 2010, after which there was a strong downward trajectory.

Figure 9. Current use of cigarettes by high school students, CSTS vs. CHKS



CSTS = California Student Tobacco Survey
CHKS = California Healthy Kids Survey

National Comparison (2001-02 to 2015-16)

This section compares the trends found in the CSTS to those found in two national surveys of youth, Monitoring the Future (MTF) and the National Youth Tobacco Survey (NYTS). As in the comparison to

CHKS, analyses were limited to cigarette smoking because the surveys gathered information on different tobacco products, but all of them asked about ever use (lifetime use) and current use of cigarettes (use within the last 30 days). Table 42 provides information about the survey parameters and the grades included in the analyses.

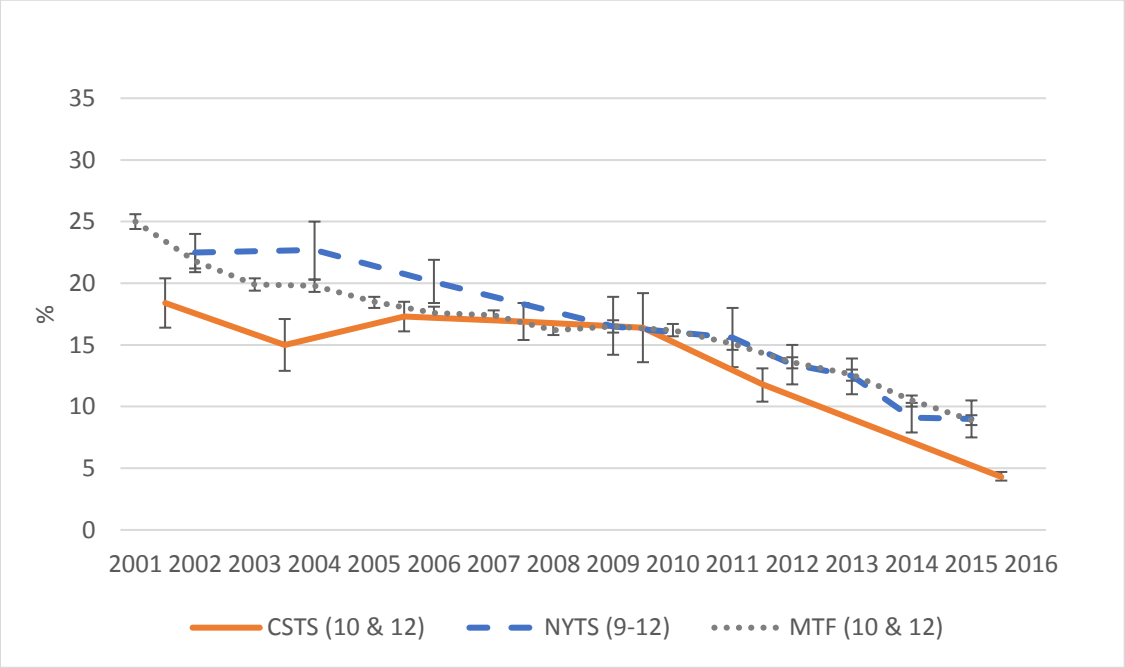
Table 42. Survey parameters for national comparison

	Years	Frequency	Grades	Region
CSTS	2001-2016	biennial	10, 12	State
MTF	2001-2015	annual	10, 12	National
NYTS	2002-2015	annual/biennial	9-12	National

As in the earlier analyses of trend data, these analyses used the demographics of the first survey year of each survey to standardize the estimates.

Figure 10 shows the trends in cigarette smoking for high school students over time. The CSTS, which surveyed only California students, shows lower prevalence rates than the MTF or NYTS, which surveyed high school students across the nation. The CSTS shows California students had a lower tobacco use rate in 2001-02. However, there was no significant decline from 2001-02 to 2009-10, while the prevalence for the nation declined steadily. As a result, the two curves reach similar prevalence around 2009-10. Since then, California has shown a greater decline and reached a lower prevalence again by 2015-16.

Figure 10. Current use of cigarettes by high school students, CSTS vs. NYTS vs. MTF



CSTS = California Student Tobacco Survey
NYTS = National Youth Tobacco Survey
MTF = Monitoring the Future

Summary

The multiple waves of CSTS show that the current tobacco use among California high school students displays a distinct trend. From 2001-02 to 2009-10, there were no significant declines. Then, there was a dramatic decline that continued to 2015-16. The trend found in CSTS is confirmed by CHKS, another large school survey in California. Compared to national surveys, tobacco use among California students was lower than the national average in 2001, about the same in 2009, and then lower once again by 2015-16.

CHAPTER 7 – Marijuana

For the first time, questions about marijuana use were included in the 2015-16 California Student Tobacco Survey (CSTS). Marijuana was described in the 2015-16 CSTS as: *"Marijuana (including blunts): Ground marijuana leaves are used in blunts and joints. Blunts are cigars filled with marijuana instead of tobacco. Can also be made with hashish or hash oil."* This chapter presents data on the prevalence of marijuana and marijuana/tobacco co-use across demographics. It compares personal characteristics (such as susceptibility, perceptions of harm, etc.) of students who have never used marijuana to those who currently use marijuana (within the last 30 days) or who had used marijuana in the past but not within the last 30 days (i.e. former users).

Prevalence of Marijuana and Marijuana/Tobacco Co-Use

Table 43 presents rates of current (last 30 days) marijuana use among high school students by gender, ethnicity, and grade. It shows both overall marijuana use and rates based on whether students used marijuana but not tobacco or if they used both marijuana and tobacco. Tobacco use consisted of cigarettes, little cigars or cigarillos, hookah, or e-cigarettes. Overall, a total of 14.5% of high school students reported currently using marijuana. Across all demographic variables, current use of both marijuana and tobacco (8.5%) was more common than use of marijuana only (6.0%). Males had higher rates of overall marijuana use than females, and were more likely to currently use both marijuana and tobacco. Asians were least likely to use marijuana compared to all other ethnic groups. Older students were more likely to use marijuana than younger students (18.0% vs. 11.2%, respectively).

Table 43. Current marijuana use and current marijuana/tobacco co-use by gender, ethnicity, and grade among high school students

	N	Overall marijuana use % (95% CI)	Marijuana without tobacco % (95% CI)	Both marijuana and tobacco % (95% CI)
Overall	41494	14.5 (13.9-15.0)	6.0 (5.6-6.3)	8.5 (8.1-8.9)
Gender				
Male	20674	15.5 (14.7-16.3)	5.4 (4.9-5.9)	10.1 (9.4-10.7)
Female	20719	13.4 (12.7-14.1)	6.5 (6.0-7.1)	6.9 (6.4-7.4)
Ethnicity				
White	7655	17.7 (16.6-18.9)	5.9 (5.2-6.6)	11.8 (10.8-12.8)
Black	1287	17.9 (14.5-21.2)	10.0 (7.4-12.7)	7.8 (5.6-10.1)
Hispanic	22200	15.1 (14.4-15.9)	6.6 (6.0-7.1)	8.5 (8.0-9.1)
Asian	5142	5.5 (4.6-6.4)	2.7 (2.0-3.4)	2.8 (2.2-3.4)
NHOPI	382	11.1 (7.3-14.8)	4.0 (1.4-6.6)	7.0 (4.2-9.9)
Other	1018	13.0 (10.1-15.8)	3.4 (2.0-4.8)	9.6 (7.0-12.2)
Multiple	3580	17.1 (15.1-19.0)	6.8 (5.3-8.3)	10.3 (8.8-11.7)
Grade				
Grade 10	21988	11.2 (10.5-12.0)	5.0 (4.5-5.6)	6.2 (5.7-6.7)
Grade 12	19506	18.0 (17.2-18.8)	7.0 (6.5-7.5)	11.0 (10.4-11.6)

NHOPI = Native Hawaiian and Other Pacific Islander

Other: See Appendix for definition

Marijuana Use by Geographic Region

Table 44 shows marijuana use among high school students by geographic region. The state of California was divided into four regions: Northern, Central, Greater Bay, and Southern California (for a map and list of counties, refer to Figure 5 and Table 31). The rate of current marijuana use was highest in Northern (18.0%) and Greater Bay (16.5%) regions, followed by Central (14.2%) and Southern (13.4%) California regions.

Table 44. Marijuana use by 4 regions among high school students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	41602	70.4 (69.8-71.1)	15.0 (14.5-15.6)	14.5 (14.0-15.1)
Northern	2691	69.4 (67.0-71.8)	12.6 (10.9-14.3)	18.0 (16.0-20.0)
Central	5632	67.4 (65.7-69.1)	18.4 (16.9-19.8)	14.2 (13.0-15.5)
Greater Bay	11021	68.3 (67.0-69.6)	15.1 (14.1-16.1)	16.5 (15.5-17.6)
Southern	22258	71.9 (71.0-72.9)	14.7 (13.9-15.4)	13.4 (12.7-14.1)

First Product Used

Students who indicated that they had used cigarettes and marijuana were asked which product they had tried first. Approximately two thirds (64.6%) of these high school students reported they had tried marijuana before trying cigarettes. About a third (35.4%) reported using cigarettes before marijuana.

Marijuana Use by Personal Characteristics

Table 45 shows student-reported academic grades by marijuana use status, comparing never users, former users, and current users of marijuana. Overall, students who had never used marijuana reported higher reported academic achievement, while current users tended to report lower academic achievement.

Table 45. Marijuana use by reported academic achievement among high school students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	41073	70.6 (69.9-71.2)	15.0 (14.5-15.5)	14.4 (13.9-15.0)
Mostly A's and B's	21735	77.1 (76.3-78.0)	12.2 (11.5-12.8)	10.7 (10.1-11.3)
Mostly B's and C's	13032	66.2 (64.9-67.5)	17.5 (16.5-18.5)	16.3 (15.2-17.3)
Mostly C's and D's	4414	59.2 (57.0-61.5)	18.9 (17.2-20.6)	21.9 (20.0-23.8)
Mostly D's and F's	1460	49.5 (45.4-53.6)	22.8 (19.3-26.4)	27.7 (23.9-31.4)
No grades	432	66.8 (60.0-73.6)	12.5 (7.1-17.9)	20.7 (15.3-26.1)

Students were asked: *In the last 30 days, how many days did you miss school for any reason, with or without permission?* In this survey, no attempt was made to determine the reason for the absences. Table 46 shows that absenteeism was associated with higher rates of marijuana use among high school students. Current use of marijuana was 9.1% for those students who had not missed any school in the past month compared to 15.2% for those with 1-5 days absence. Those with six or more days absent had the highest rates of marijuana use at 29.1%.

Table 46. Marijuana use by school absence in the past month among high school students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	41085	70.6 (69.9-71.3)	15.0 (14.5-15.5)	14.4 (13.9-15.0)
0 days	15737	78.2 (77.2-79.2)	12.6 (11.8-13.4)	9.1 (8.5-9.8)
1-5 days	20359	68.8 (67.8-69.8)	16.0 (15.2-16.7)	15.2 (14.4-16.0)
6 + days	4989	51.7 (49.5-53.9)	19.2 (17.6-20.9)	29.1 (27.0-31.2)

Students were also asked: *During an average week, about how much money do you get from a job or other sources (like an allowance)?* Table 47 shows that greater amounts of spending money corresponded with greater use of marijuana. Students with no money had a current marijuana use prevalence of 8.3%, which increased to 11.1% among those with $1-$10, 15.9% among those with $11-$50, and 26.8% among students with over $50 a week.

Table 47. Marijuana use by weekly spending money among high school students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	41062	70.6 (69.9-71.3)	15.0 (14.5-15.5)	14.4 (13.9-14.9)
None	14680	79.8 (78.7-80.8)	11.9 (11.1-12.8)	8.3 (7.6-9.0)
$1-$10	6908	74.6 (73.0-76.2)	14.3 (13.0-15.6)	11.1 (10.0-12.2)
$11-$50	11766	67.9 (66.5-69.2)	16.2 (15.2-17.2)	15.9 (14.9-17.0)
$51 +	7708	53.6 (51.9-55.2)	19.7 (18.3-21.0)	26.8 (25.3-28.3)

Table 48 shows the pattern of marijuana use by the frequency of attending religious services. High school students who never attended religious services were more likely to be current marijuana users than those who attended services more frequently.

Table 48. Marijuana use by attendance at religious services among high school students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	41101	70.6 (69.9-71.2)	15.0 (14.5-15.5)	14.4 (13.9-15.0)
Never	11726	65.8 (64.5-67.1)	15.4 (14.4-16.5)	18.7 (17.7-19.8)
Rarely	12625	68.8 (67.5-70.0)	16.2 (15.2-17.2)	15.0 (14.0-16.1)
Once or twice a month	5274	70.6 (68.7-72.6)	16.1 (14.6-17.7)	13.2 (11.8-14.6)
About once a week	7984	77.1 (75.6-78.5)	13.1 (12.0-14.2)	9.8 (8.8-10.8)
More than once a week	3492	78.1 (75.9-80.3)	11.8 (10.1-13.5)	10.0 (8.4-11.7)

Table 49 shows the use of marijuana products among high school students by the personality trait of sensation-seeking[2] and by a measure of depressive symptoms. Students were asked how much they agreed with the statement: *I like new and exciting experiences, even if I have to break the rules*. The answer options of strongly agree, agree, disagree, and strongly disagree were dichotomized into Yes (agree or strongly agree) or No (disagree or strongly disagree). Students were also asked: *In the last 12 months, did you ever feel sad and hopeless every day for 2 weeks or more?* Those coded as sensation seekers and those with depressive symptoms in the last 12 months were more likely to currently use marijuana.

Table 49. Marijuana use by sensation-seeking and depression among high school students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall*	41094	70.6 (69.9-71.3)	15.0 (14.5-15.5)	14.4 (13.9-14.9)
Sensation-seeking				
Yes	20850	57.2 (56.2-58.2)	20.0 (19.2-20.9)	22.8 (21.9-23.6)
No	20203	84.8 (84.0-85.6)	9.7 (9.0-10.3)	5.5 (5.0-6.0)
Depressive symptoms				
Yes	11878	64.4 (63.1-65.8)	18.3 (17.2-19.4)	17.3 (16.2-18.3)
No	29216	73.2 (72.4-73.9)	13.6 (13.0-14.2)	13.2 (12.6-13.8)

*Note: Sample sizes of the two groups varied slightly. The group with the larger sample size is shown.

Offers and Susceptibility to Marijuana

In the 2015-16 CSTS, students were asked about whether they were offered marijuana in the last 30 days. The question was: *In the last 30 days, has anyone offered you...* Table 50 shows the percentage of high school students who had been offered marijuana in the last 30 days. Overall, over a third of high school students reported having been offered marijuana in the last 30 days, and about 18% of never users had been offered marijuana.

Table 50. Offers of marijuana within the last 30 days among high school students

	Overall N=41545 % (95% CI)	Never users N=29411 % (95% CI)	Former users N=6039 % (95% CI)	Current users N=5916 % (95% CI)
In the last 30 days, has anyone offered you marijuana?	35.0 (34.3-35.7)	18.4 (17.7-19.1)	57.6 (55.7-59.6)	91.6 (90.4-92.8)

Susceptibility to begin marijuana use was measured by asking students who never used marijuana whether they would use it if their best friend offered it. Answer options were definitely yes, probably yes, probably not, and definitely not. Those who answered anything other than definitely not were considered susceptible.[3] Almost a quarter (24.8%) of high school students who had never used marijuana were susceptible to trying it, if offered by their best friend.

Harm Perceptions of Marijuana

The 2015-16 CSTS survey included the question: *Which is more harmful, cigarettes or marijuana?* The question was asked of all students. Very few high school students indicated that marijuana was more harmful than cigarettes. About two thirds (60.2%) stated cigarettes were more harmful and about a third (29.7%) indicated they believed cigarettes and marijuana were equally harmful. Only 10.1% of high school students said they believed marijuana was more harmful than cigarettes. The same harm perception question was asked with e-cigarettes versus marijuana (i.e. *which is more harmful, e-cigarettes or marijuana?*). Most high school students perceived e-cigarettes to be more harmful than marijuana (39.2%). Over a quarter of students thought marijuana was more harmful (28.6%), and nearly a third (32.2%) believed the products were equally harmful.

Use of Marijuana – 8th grade

Table 51 shows the prevalence of current marijuana use among 8th grade students. Overall, rates of current marijuana use were much lower than for older students; among 8th grade students, 3.5% reported using marijuana in the last 30 days, compared to 14.5% among high school students. There were no significant differences in marijuana use by gender. Asians were the ethnicity least likely to use marijuana. Large confidence intervals across ethnicity make it difficult to interpret differences.

Table 51. Current marijuana use and marijuana/tobacco co-use by gender, ethnicity, and grade among 8th grade students

	N	Overall % (95% CI)	Marijuana only % (95% CI)	Both marijuana and tobacco % (95% CI)
Overall	6128	3.5 (2.9-4.0)	1.3 (0.9-1.6)	2.2 (1.8-2.7)
Gender				
Male	2999	3.4 (2.6-4.1)	1.2 (0.7-1.6)	2.2 (1.6-2.8)
Female	3112	3.5 (2.7-4.2)	1.3 (0.8-1.8)	2.1 (1.5-2.7)
Ethnicity				
White	1081	2.7 (1.5-3.9)	1.2 (0.3-2.2)	1.4 (0.7-2.2)
Black	194	4.4 (0.7-8.1)	4.0 (0.4-7.7)	0.4 (0.0-1.1)
Hispanic	3282	4.4 (3.6-5.3)	1.5 (1.0-1.9)	3.0 (2.3-3.7)
Asian	573	0.5 (0.0-1.1)	0.2 (0.0-0.6)	0.3 (0.0-0.7)
NHOPI	33	2.9 (0.0-8.6)	2.9 (0.0-8.6)	--
Other	227	1.9 (0.5-3.3)	0.3 (0.0-0.8)	1.6 (0.3-3.0)
Multiple	703	1.8 (0.8-2.8)	0.4 (0.0-0.8)	1.4 (0.5-2.3)

NHOPI = Native Hawaiian and Other Pacific Islander

First Product Used – 8th grade

Approximately two-thirds (64.7%) of 8th grade students who had used both cigarettes and marijuana reported that they tried marijuana before trying cigarettes; 35.3% reported they tried cigarettes before trying marijuana.

Tables 52-55 show academic achievement, school absenteeism, weekly spending money, and attendance at religious services by marijuana use. Current users of marijuana tended to have lower academic achievement, higher rates of school absenteeism, more spending money, and were more likely to never attend religious services.

Table 52. Marijuana use by academic achievement among 8th grade students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	6098	91.3 (90.4-92.3)	5.2 (4.4-6.0)	3.4 (2.9-4.0)
Mostly A's and B's	3745	93.9 (92.8-95.0)	3.8 (2.8-4.7)	2.3 (1.7-2.9)
Mostly B's and C's	1484	90.1 (88.2-92.0)	6.3 (4.7-8.0)	3.6 (2.5-4.7)
Mostly C's and D's	563	85.1 (81.2-89.0)	9.2 (5.7-12.7)	5.7 (3.7-7.7)
Mostly D's and F's	249	77.9 (71.9-83.9)	9.4 (5.2-13.6)	12.8 (8.2-17.3)

Table 53. Marijuana use by school absence in the past month among 8th grade students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	6087	91.3 (90.3-92.2)	5.3 (4.5-6.1)	3.5 (2.9-4.0)
0 days	2884	92.9 (91.7-94.1)	4.1 (3.1-5.1)	3.0 (2.3-3.7)
1-5 days	2691	91.6 (90.2-93.0)	5.8 (4.5-7.0)	2.7 (1.9-3.4)
6 + days	512	79.9 (75.2-84.5)	9.6 (5.7-13.6)	10.5 (7.5-13.6)

Table 54. Marijuana use by weekly spending money among 8th grade students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	6084	91.3 (90.4-92.3)	5.2 (4.4-6.0)	3.5 (2.9-4.0)
None	2752	93.6 (92.5-94.8)	4.0 (3.1-5.0)	2.3 (1.6-3.0)
$1-$10	1613	92.0 (90.0-94.0)	5.7 (3.9-7.6)	2.3 (1.4-3.2)
$11-$50	1320	89.4 (87.3-91.5)	6.2 (4.5-8.0)	4.4 (3.1-5.7)
$51 +	399	79.0 (74.3-83.8)	7.5 (4.4-10.6)	13.4 (9.5-17.4)

Table 55. Marijuana use by attendance at religious services among 8th grade students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	6076	91.2 (90.3-92.2)	5.3 (4.5-6.1)	3.5 (2.9-4.0)
Never	1488	88.6 (86.5-90.7)	6.4 (4.6-8.1)	5.0 (3.8-6.2)
Rarely	1704	91.3 (89.3-93.2)	5.7 (3.9-7.4)	3.0 (2.1-4.0)
Once or twice a month	825	92.6 (90.4-94.8)	4.9 (3.1-6.6)	2.5 (1.2-3.8)
About once a week	1418	92.7 (91.1-94.4)	4.1 (2.9-5.4)	3.1 (1.9-4.3)
More than once a week	641	92.2 (89.5-94.9)	4.7 (2.4-6.9)	3.1 (1.5-4.7)

Table 56 shows the use of marijuana products among 8th grade students by the personality trait of sensation-seeking[2] and by a measure of depressive symptoms. Those coded as sensation seekers and those with depressive symptoms in the last 12 months were much more likely to use marijuana.

Table 56. Marijuana use by sensation-seeking and depression among 8th grade students

	N	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall*	6097	91.3 (90.3-92.2)	5.3 (4.5-6.1)	3.4 (2.9-4.0)
Sensation-seeking				
Yes	2196	81.8 (79.7-83.9)	10.0 (8.2-11.8)	8.2 (6.9-9.6)
No	3882	96.6 (95.9-97.4)	2.6 (1.9-3.4)	0.7 (0.4-1.0)
Depressive symptoms				
Yes	1655	85.2 (82.9-87.5)	9.0 (7.1-11.0)	5.8 (4.4-7.1)
No	4442	93.6 (92.7-94.6)	3.8 (3.0-4.6)	2.6 (2.0-3.1)

*Note: Sample sizes of the two groups varied slightly. The group with the larger sample size is shown.

Offers and Susceptibility to Marijuana – 8th grade

Over one in seven (15.2%) students who had never used marijuana were susceptible to trying marijuana if offered it by their best friend.

Table 57 shows the percentage of 8th grade students who reported having been offered marijuana in the last 30 days. Overall, 15% of students reported having been offered marijuana in the last 30 days. Over 9% of 8th graders who never used marijuana had been offered it in the last 30 days.

Table 57. Offers of marijuana in the last 30 days among 8th grade students

	N	Overall % (95% CI)	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
In the last 30 days, has anyone offered you marijuana?	6133	15.0 (13.8-16.2)	9.3 (8.3-10.3)	61.5 (54.1-69.0)	90.2 (85.6-94.7)

Harm Perceptions of Marijuana – 8th grade

Comparative perceptions of harm between cigarettes and marijuana were measured among 8th grade students. Unlike the older students, the majority of 8th graders (40.5%) believed that cigarettes and marijuana were equally harmful. The remaining 8th graders were split between beliefs that cigarettes were the more harmful product (30.4%) or that marijuana was a more harmful product (29.2%).

When asked to compare the relative harm of e-cigarettes and marijuana, most 8th grade students believed that marijuana was more harmful than e-cigarettes (46.2%). Over a third of 8th grade students (35.8%) believed the two products were equally harmful, and 18.0% believed that e-cigarettes were the more harmful product.

Summary

Current (last 30 day) marijuana use among California high school students was high (14.5%). Among those who used marijuana in the last 30 days, almost 60% also used a form of tobacco (cigarettes, little cigars or cigarillos, hookah, or e-cigarettes). About two thirds of those who had tried both cigarettes and marijuana reported they had used cigarettes before marijuana. Among high school students who had never tried marijuana, almost a quarter were susceptible to trying it, and 18% reported having being offered marijuana in the last 30 days. Although in general, rates of marijuana use, exposure to offers, and susceptibility were considerably lower among 8th grade students, the proportion of marijuana/tobacco co-use was similar to that of high school students (63%).

CONCLUSION

The 2015-16 California Student Tobacco Survey (CSTS) brings good news as well as raises concerns. The good news is that the rate of current tobacco use among California high school students has dropped dramatically in recent years. This contrasts with the first decade of the 21st century, where no significant change in tobacco use prevalence among California youth was observed. From 2001-02 to 2009-10, the current tobacco use prevalence among California high school students remained essentially unchanged. From 2009-10 to 2015-16, however, the current use of tobacco dropped by 59% (e-cigarettes were not included in this calculation because they were not measured in earlier CSTS's). When e-cigarettes are included in the calculation, the total tobacco use still dropped by 29% (assuming e-cigarette use prevalence was zero at 2009-2010). This shift in the trend of current tobacco use is confirmed by data from the California Healthy Kids Survey. Given the efforts made in California to eliminate tobacco use and minimize tobacco-related illness for our state's youth, the observed decline is good news indeed.

Other findings from the 2015-16 CSTS are concerning. While the reduction of cigarette smoking is highly significant, the increase in use of new tobacco products, specifically e-cigarettes, is also dramatic. E-cigarettes came to the U.S. market around 2007. The use of e-cigarettes among youth became noticeable around 2011, although it was limited to a small proportion of youth. By 2015-16, however, it became the number one tobacco product used by California high school students (8.6%). Since e-cigarettes are mostly unregulated, the ingredients of the products that the students are using are not always known. It is not clear what the health consequences are for using e-cigarette and the e-liquid flavors, which are available in numerous varieties and are very attractive to youth.[9] What is already known is that nicotine can negatively impact brain development.[10] There is concern that the popularity of e-cigarettes among youth may negatively impact hard-won gains in tobacco control, such as the anti-smoking social norms that took so many years to achieve. The modifiability of many e-cigarettes is another concern, as they can be readily used for consuming cannabis products. Given the popularity of marijuana among high school students, the potential of e-cigarettes for facilitating marijuana use should be carefully examined and monitored.

Among those who do not use tobacco, a significant proportion are still exposed to second-hand smoke either at home or in cars. Moreover, many are susceptible to trying the products themselves. Their susceptibility can be measured both environmentally and cognitively. Environmentally, they are around people who will offer them different tobacco products. Cognitively, a large number of students are not committed to abstaining from trying tobacco in the future. These are causes for concern.

Another cause for concern regards the findings of disparity in tobacco use. Even though tobacco use has dropped significantly, disparities still exist. Some are linked to individual factors such as sensation-seeking or depression that predict a higher likelihood of tobacco use. There are other disparities, such as geographic differences in tobacco use. Students living in rural areas are consistently more likely to use tobacco than students living in the urban areas. Such a disparity calls for possible policy interventions that can help with accelerating the reduction of tobacco use in these disadvantaged areas.

In summary, the 2015-16 CSTS findings provide cause for celebration as well as raise new concerns. The dramatic reduction in tobacco use suggests that some past campaigns in tobacco control have finally

reaped fruit. In the meantime, there are many challenges ahead that call for a new, creative approach to reduce tobacco use and to improve the overall health of California youth.

APPENDIX – Survey Methodology of the 2015-16, California Student Tobacco Survey

Survey Administration

The California Student Tobacco Survey (CSTS) is funded by the California Department of Public Health (CDPH) and has been conducted biennially since 2001-02. The survey was administered by WestEd until 2011-12. The 2015-16 CSTS is the first administered by UCSD. Due to delays in awarding the contract, no survey was conducted in 2013-14, which left a four-year gap between the current survey and the previous survey in 2011-12. The survey administration is detailed in the *Technical Report on Analytic Methods and Approaches Used in the California Student Tobacco Survey 2015-2016* by S-H. Zhu, et al.[1]

Sampling Strategy

Participating schools were encouraged to have all students in a grade take the survey. When this was not possible (23% of schools), classrooms within a grade were randomly sampled for participation. Thus, this survey utilized a two stage sampling in which stage 1 was the random sampling of schools within regions and stage 2 was the random sampling of classrooms within schools. The state was divided into 12 regions, which were the same as those that have been used for the California Tobacco Survey of adults. Sampling used the probability proportional to size (PPS) method and stratified by region with oversampling of less densely populated regions, African American students, and schools that received Tobacco Use Prevention Education program funding.

Participation

To increase participation in CSTS, schools were provided $500 for administering the survey. Teachers acted as proctors. Schools were encouraged to use the online version of the survey, but paper copies were available if schools were unable to conduct the survey online (12.8% of schools).

Student participation was voluntary and anonymous. Consent procedures were consistent with the district guidelines. Most schools only required parental notification with the opportunity for guardians to opt the student out of the survey rather than providing active consent (i.e., a signed permission document). In districts that required active parental consent (12%), only students who returned consent forms signed by a guardian were included in the survey.

Analysis

Data are weighted according to procedures described in the technical report cited above and estimates include 95% confidence intervals. The 2015-16 CSTS was primarily done online with appropriate skip patterns that decreased the number of questions a respondent needed to answer. For example, students who indicated that they had never smoked a cigarette were not asked if they had smoked one in the previous 12 months or 30 days. Prior to 2015-16, the CSTS was done on paper where each question was asked, regardless of the logic. On paper, students who had never smoked a cigarette were still asked about use in the last 30 days and had the option of selecting *I have never smoked a cigarette*. Due to the differences in paper vs. online, the analyses recalculated the paper surveys using the logic of

the online version. As a result, the prevalence rates reported for earlier surveys may not be exactly the same as those found in other CSTS reports.

To examine the trend in tobacco prevalence over time, data after 2001-02 were adjusted by demographics (such as age and ethnicity/race) in the 2001-02 survey. This adjustment applies throughout Chapter 6, which examines the CSTS data over time and which compares the trends to another California dataset and to national datasets. Details about the categorization of ethnicity/race when comparing across time or surveys can be found in the CDC's Office on Smoking and Health—2004 National Youth Tobacco Survey Codebook (https://www.cdc.gov/tobacco/data_statistics/surveys/nyts/).[11]

Sample Characteristics

The CSTS survey was conducted to provide stable state prevalence rates using stratified random sampling and proper weighting. The study design does not allow for county or district-level data since most have an insufficient sample size to provide stable estimates. Therefore, this report presents state-level and regions findings only. Future surveys could use a different sampling scheme and a larger number of schools in order to obtain local estimates. Although we were unable to examine district or county level data, we did examine tobacco use across what is termed *urban classification* in which schools are classified into city, suburb, town, and rural using the U.S. Department of Education's Common Core of Data.[6] For the analyses, we combined town and rural, since in California there are small numbers of schools in these classifications.

Survey Sample 2016 CSTS

Table 58 provides information about the number of schools and students in the 2015-16 survey sample for each of the three grades. The total sample included 47,981 students from 117 schools. Grades 10 and 12 are considered high school and 8th grade is considered middle school.

Table 58. Numbers of schools and students participating, middle school vs. high school

	Middle School (8th)	High School (10th & 12th)	Total
Number of schools	27	90	117
Number of students	6160	41,821	47,981

Survey Content

The survey included respondent characteristics, use of various products (including tobacco and e-cigarettes), opinions about cigarettes and e-cigarettes and their relative harmfulness, and exposure to school tobacco prevention programs. The survey assessed students' susceptibility to using products[3] and their exposure to secondhand smoke and e-cigarette vapor. The current survey also included questions about whether the respondent had been offered cigarettes, little cigars or cigarillos (LCC), hookah, or e-cigarettes in the last 30 days.

Ethnicity/Race

Ethnic background was determined using two questions. The first asked about Hispanic (Latino) origin and the second asked participants to indicate how they describe themselves (i.e., their race) by marking

all that apply: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, White, or Other. Ethnicity/race categories of the CSTS are similar to the classification used by the California Department of Education (CDE) with the exception that CDE does not provide an Other category. In the 2015-16 CSTS, the Other ethnic category included non-standard entries (such as Middle Eastern or Italian). In the current report, American Indian or Alaska Native was collapsed with Other due to low numbers. Table 59 compares data from the 2015-16 CSTS survey to the enrollment reported by the CDE. In this analysis, respondents who indicate that they are Hispanic are classified that way, regardless of what race they indicate. As a result, there is a high representation of Hispanic and lower representations of other ethnic backgrounds. Even so, this labelling is consistent with other surveys, including previous CSTS surveys. The proportion of Hispanics in this survey mirrors CDE data with over half of all students now being classified as Hispanic.

One thing to note is that the rate of multiple race is far higher in the CSTS than reported by CDE (9.0% vs. 2.5%). One possible reason for the difference is that CSTS is based on student self-report whereas the CDE is based on parent report of the child's race. Students and parents may not have the same perspective regarding multi-racial identification. One likely consequence of the large multiple race category is that it results in lower proportions of Other races. Given the ethnic diversity of California, and the increasing number of people who identify themselves as two or more races,[12] the issue of how to analyze race data will continue to be a relevant one for the CSTS.

Table 59. Sample demographics

	N=47695	Multiple Race (%)	CDE Enrollment (%)
NH-White	8776	18.4	25.0
NH-Black	1499	3.1	6.2
Hispanic	25714	53.9	52.8
NH-Asian	5728	12.0	11.9
NH-AI/AN	132	0.3	0.6
NH-NHOPI	421	0.9	0.5
NH-Other	1122	2.4	Not reported 0.5
NH-Multiple	4303	9.0	2.5

NH = Non-Hispanic
AI/AN = American Indian/Alaska Native
NHOPI = Native Hawaiian and Other Pacific Islander
Ethnicity missing = 286

To provide a greater understanding of the impact of our classifications of ethnicity/race, Table 60 compares how individuals are labelled using the strategy explained above to whether they endorse a given race at all. For example, under the usual classification, the number of Blacks is 1,499 (i.e., non-Hispanic Black who did not endorse any other racial identity). However, there were more than twice that number who indicated their race was Black. The greater number of Blacks include those who also indicated they were Hispanic or who selected at least one other race. This phenomenon of higher endorsement that labeling of races is even more striking for NHOPI (n=421 or 2,334, depending on the categorization strategy) and for AI/AN (n=132 or 2,710).

Table 60. Ethnicity/race

	Labeled		Endorsed	
	N	**%**	**N**	**%**
White	8776	18.4	17825	37.4
Black	1499	3.1	3945	8.3
Hispanic	25704	53.9	25704	53.9
Asian	5728	12.0	8745	18.3
AI/AN	132	0.3	2710	5.7
NHOPI	421	0.9	2334	4.9
Other	1122	2.4	21743	45.6
Multiple	4302	9.0	N/A	N/A

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